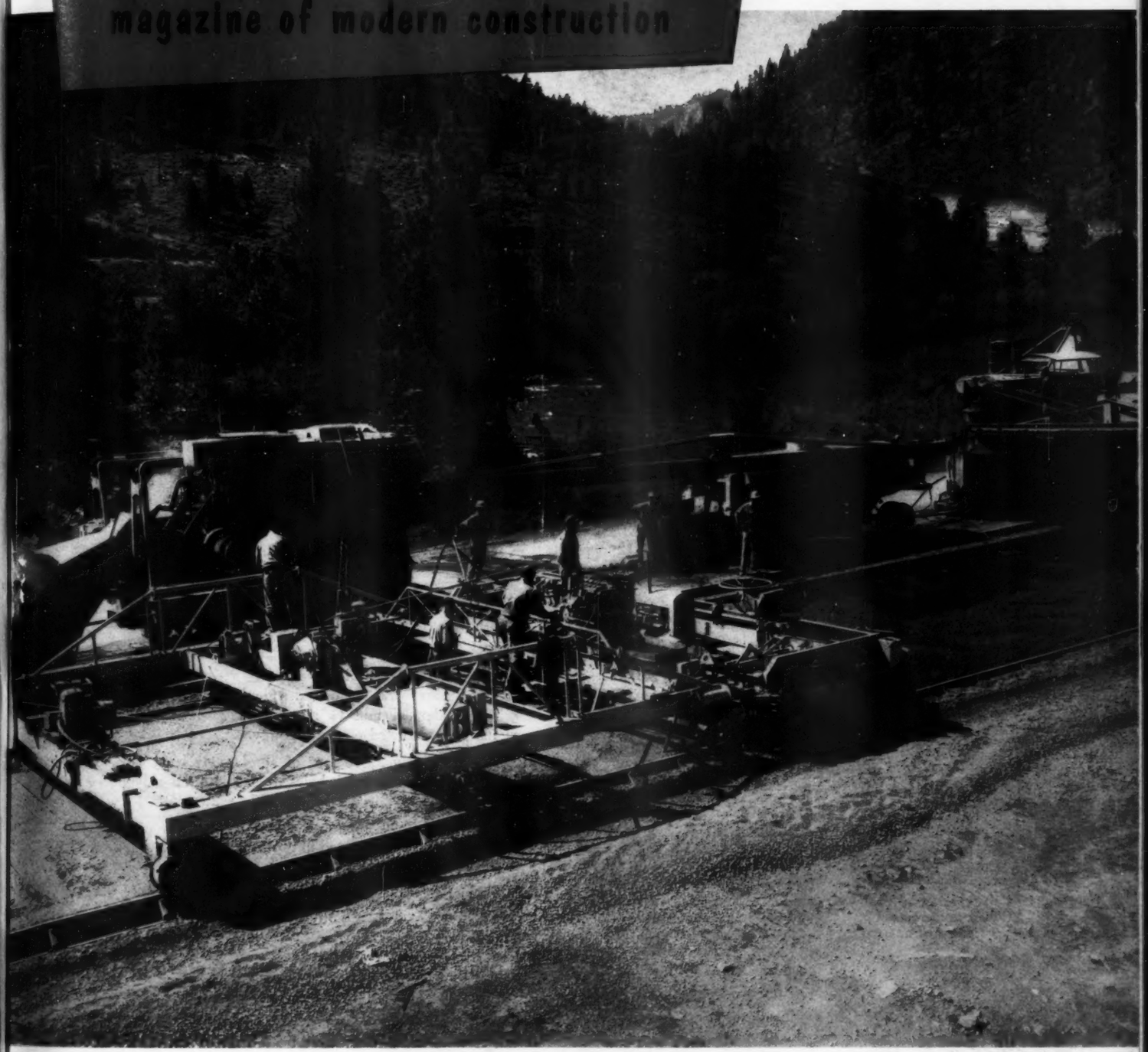
Contractors and Engineers

magazine of modern construction

JANUARY 1959

A Buttenheim Publication



Paving interstate mountain road
Page 36

PRODUCTIVITY
Key to Profits '59

New equipment and materials... 97
Equipment application reports... 15

Asphalt plays two roles on this Pennsylvania highway

Constructing a heavy-duty hot-mix Texaco Asphaltic Concrete pavement on 10 miles of State Route 22, near Harrisburg, Pa. General Contractor — N. Garman and Sons, Reading, Pa. Paving Contractor — Windsor Service, Inc., Reading.

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magazine of modern construction

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Editorial

Taxation without representation

Bypassing of communities by the interstate highways has, in some states, become an issue which unfortunately has strong political overtones. This is the case in Arizona, where the governor took a firm stand against bypassing "unless and until the communities manifest their desires to be bypassed".

In a published statement, the governor says, "Roads which the federal government expects the states to maintain solely with state money should be located in accordance with the desires of the people of those states." We agree that the states do spend the money, but we think the more important question is where they get it.

We think a fairer position would be: "Roads which are built and will be maintained solely with monies collected from the *road users* should be located in accordance with the desires of those road users." Obviously, road users will not be in complete agreement on road locations. But the desires of the majority can be scientifically and accurately determined by means of origin and destination studies. This is in strong contrast to the local public hearings, which often do little more than confuse issues by giving local hecklers an opportunity to be heard and to get their biased opinions recorded.

Motorists and truckers are in a group that bears a heavy burden of taxation without corresponding representation. However, they can readily observe how their highway tax money is being spent, especially as they travel from state to state. And they can and will eventually make their voices heard through their local, state, and national representatives.

Building expressways such as those of the Interstate System through built-up areas is usually much more expensive than bypassing these areas. If those traveling the highway do not want to go through or into an urban area, that area should be bypassed, regardless of whether or not its citizens —or even the governor of the state— want it bypassed.

Road users as a group have paid dearly for many mistakes, deficiencies, and inefficiencies in the past. Now, the increase in tax pressure on road users and publicity on the Interstate System are increasing their awareness that they are paying for the highways.

We think that this group has no objection to paying for the Interstate System and many first-class state and local highways. But we do think that road users will resist the expenditure of their money to satisfy local interests that are not in accord with their own.

We believe that these highway users will gladly pay for such things as big, visible, properly worded directional and informational signs, for reasonable roadside beautification, and for more and better roadside rest areas. Most drivers realize the need for adequate maintenance of these costly highways that they have built. Many will even admit their willingness to pay for adequate enforcement of reasonable traffic laws.

Highway officials and other government officers no doubt feel the political pressure of local groups much more strongly than the pressure of a widely scattered group like the road users. But this is still America. Taxation without representation is no more popular today than it was in 1776.

If these officials are farsighted, they must realize the importance of spending the highway funds in a way that makes sense to those taxed—the highway users.

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A Blaw-Knox paddle-type spreader tows a Lewis leveling attachment as it strikes off concrete on U. S. 40 in California. A Koehring and a B-K paver place the mix.
Page 36.

Scrapers, tractors, graders work on academy landscaping

An Allis-Chalmers HD-19 tractor push-loads an A-C TS-160 scraper during a slope correction job at the Air Force Academy at Colorado Springs. The rigs are working as close as possible to the trees in order to preserve the natural beauty of the site.

The new Air Force Academy campus north of Colorado Springs, Colo., is an area of natural beauty—a 17,800-acre site at the base of the Rampart Range of the Rocky Mountains. While some $120 million of construction has gone into the educational institution, many scars have been left in the landscape, and these must be healed or corrected.

Among the major problems in the landscaping program are the sloping of banks, control of erosion, and the placing of suitable topsoil on the scarred areas. New seedings and plantings will then have a chance to root and grow to provide the permanent cover. All this is designed to leave the area more beautiful than it was originally.

Corrective work

One of the contractors engaged in this corrective work is Carroll S. Jones, Palmer Lake, Wash. Jones, operating a fleet of Allis-Chalmers tractors, scrapers, and motor graders, also has a general contract for the maintenance of roads and grounds, and for snow removal and control during the construction period. Some of the same equipment works on this contract.

The Academy site, which measures some 7 miles north and south and 5¼ miles east-west, is broken by a series of ridges, mesas, and valleys. It lies at elevations ranging from 6,325 to 8,160 feet above sea level in a region that has about 17½ inches of annual precipitation.

Much of the area is wooded with ponderosa pine and scrub oak predominating. There are also many native shrubs and wild flowers in season. Grading the sites for the huge Academy buildings and the hundreds of smaller structures that make up the support facilities has changed the contour of much of the land, leaving raw cut and fill slopes as well as removing the native growth.

Stabilize slopes

To stabilize these slopes, it was first necessary to dress them to flat grades that would limit erosion and slides, then control runoff through proper drainage. Finally, the slopes had to be dressed with topsoil.

Jones handled all of these jobs with a spread consisting of Allis-Chalmers TS-160 motor scrapers, HD-9 and HD-19 tractor-dozers, and Model D motor graders. The fast scrapers brought in topsoil from remote stockpiles and spread it on the slopes and other planting areas so that a minimum of touching up was needed.

The machines were also effective in working on the steep slopes where additional excavation was required. This work was sometimes difficult because of the steep grades and the need for making carefully controlled cuts in tight spots. THE END

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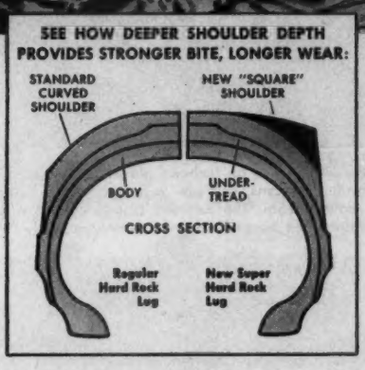

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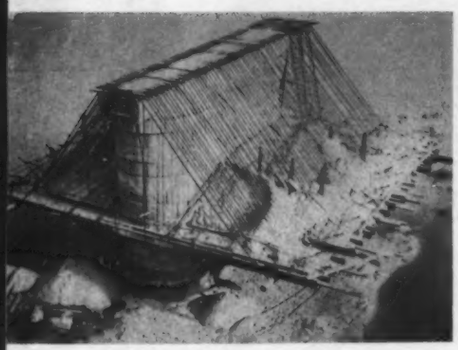
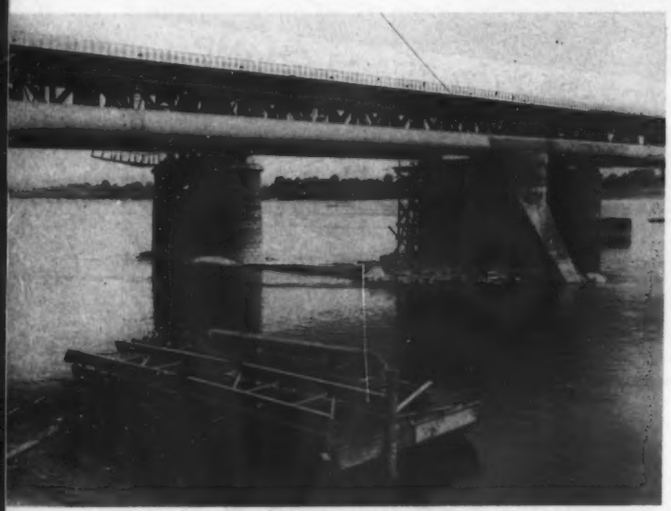


After each of the partially demolished piers was rebuilt, it was tested under heavy loads of sand pumped from the river. Sides were later added to the loading platform to hold additional tons of sand.

Structural steel is being erected from pier at right to pier at left foreground. A stiffleg on a barge is handling bridge members. Three falsework bents have been built to support the trusses. Storage yard and plant are along left bank of Vistula. Warsaw is in the background.



Pier for the bridge has an inclined plane on its upstream face as protection against ice jams. This pier is in line with a railroad bridge pier 112 feet downstream. The railroad bridge carries a 10-foot-diameter utility pipeline. The barge holds steel members ready for erection.

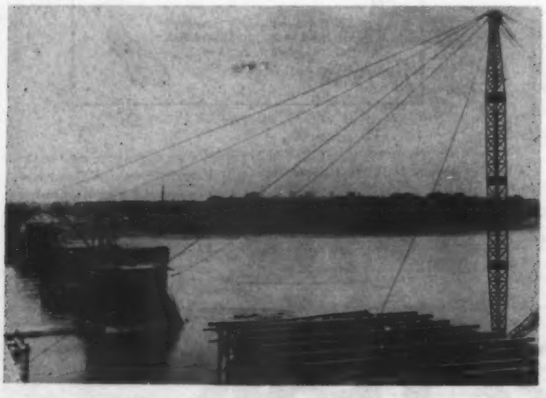
Two-deck 1,968-foot bridge being built across Vistula

Last of spans destroyed at Warsaw is rebuilt under Poland's reconstruction program

by **WILLIAM H. QUIRK**
editor

By the end of World War II, not a bridge was left across the Vistula River at Warsaw, capital and largest city of Poland. Early this year, weather permitting, the last of the five spans that were destroyed will be replaced. This newest bridge will be the third vehicular structure at Warsaw; the other two are railroad spans. Poland's building program calls for the construction of three more bridges at Warsaw in anticipation of population growth and transportation needs of the city. According to present plans, these will be built within the next 20 years.

The new structure has an over-all length of 600 meters (1,968 feet), divided into a 400-meter over-water section of structural steel; an 85-meter prestressed-concrete left-bank approach; a 40-meter prestressed-concrete right-bank approach; and two reinforced-concrete tunnel transitions to the bridge—a 35-meter section on the left bank and an 85-meter section on the right bank. The bridge



Timber falsework is laid out to support forms for prestressed-concrete approach section on the left bank. Guy derrick handles forms and concrete. Seven piers are in the river; two are on shore.

On the Warsaw side, the reinforced-concrete tunnel is 115 feet long. It will carry a tramway and connect with the prestressed-concrete approach section.

is a 2-deck structure carrying a 14-meter (46-foot) vehicular roadway on the upper level to accommodate four lanes of motor-car and bus traffic. The 7-meter-wide (23-foot) lower level is a tramway for two trolley-car tracks; sidewalks for pedestrians are provided along each side.

Traffic from the central part of Warsaw on the left bank of the river converges into a broad plaza that has a wide avenue leading to the bridge. At the bridgehead, the trolley cars take a downgrade into the tramway tunnel to gain the lower bridge level. Vehicles pass right and left of the tunnel entrance in one-way traffic patterns to the upper level.

Upstream from railroad span

The new bridge is at the north end of Warsaw and 34 meters (112 feet) upstream from a railroad bridge. The seven river piers and two land piers of the double-decker are in line with those of the railroad span. Piers of the railroad structure support steel-truss spans, and a huge steel pipe 3 meters (10 feet) in diameter. This bearing pipe, varying in thickness from 7 to 12 millimeters (5/16 to ½ inch), contains two pipelines each 720 millimeters (28 inches) in diameter. One pipeline carries drinking water to Warsaw suburbs on the right bank of the Vistula. The other carries hot water from a central power plant to furnish heat to the northern section of Warsaw on the left bank. A narrow-gage track runs inside the length of the large pipe to give maintenance workers quick and easy access to any part of these supply lines.

During a lunch period one day, Polish engineers supervising the construction of the bridge were discussing possible further uses of the big pipeline. One humorously suggested that it would make an ideal study hall for engineering students. "It's warm in there", he explained, "and we could string up some lights, put in a row of desks and chairs, and they would never be bothered by outside distractions."

When the German Army retreated westward across the Vistula in the summer of 1944, they blew up all five bridges at Warsaw. In 1957, after the Poles had reconstructed the other four spans, they carefully examined the piers of this last bridge to be replaced to see if the concrete and masonry structures might be salvaged in part, or if they would have to be completely rebuilt. The superstructure, of course, had been entirely demolished, as had the upper portions of the piers. But the lower sections of the piers, while badly damaged, appeared to be still intact at the foundation. All seven of the river piers had been originally constructed with caissons sunk to a depth of 15 meters (49 feet) below the river bottom. At Warsaw, the Vistula has an average depth of 3 meters (10 feet).

Pier restoration

Each pier was restored with an en-

(*Continued on next page*)

Polish engineers at the bridge site include Boleslaw Przelaskowski, director of highways, Warsaw; Stefan Rolla, Central Office of Public Roads; Wladyslaw Pajchel, bridge engineer; Stefan Piwonski, bureau of projects; and Wladyslaw Radziejowski, supervising engineer.

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At Nowy Targ, a 294-foot prestressed-concrete bridge is being built across the Bialy Dunajec River. Double-tee sections for each 98-foot span were precast and post-tensioned on falsework erected at the side of the bridge, then rolled into place.

the tests. When the piers showed no settlement or movement under this tremendous loading, even the skeptics were convinced that reconstruction had been accomplished without any loss of original stability and safety.

Steel over water

The 400-meter (1,312-foot) structural-steel portion of the bridge, supported on the seven river piers, consists of six truss spans, each averaging about 67 meters (220 feet) in length. Vertical clearance at normal river level is 5½ meters (18 feet). This is ample for the barge and

(Continued from preceding page)

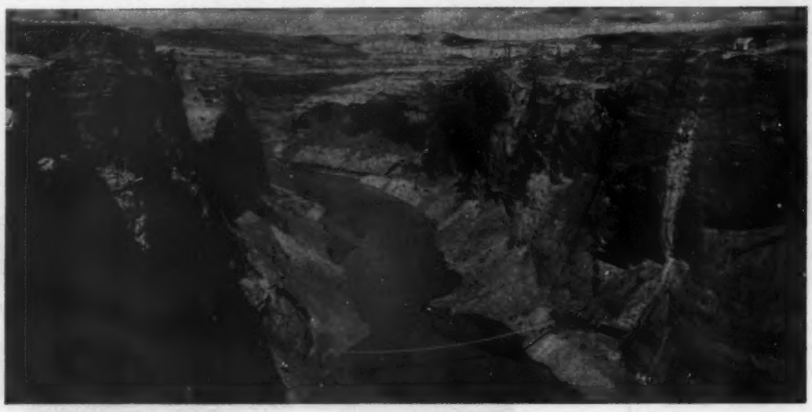
larged section and with an entirely new upper portion. The mass concrete is encased in stone. Downstream faces of the piers are rounded off with semicircular ends. The upstream face of each pier is protected against ice by an inclined plane extending from below the low-water level. The inclined masonry planes make an angle of approximately 45 degrees with the sides of the piers.

As a pier was completed, it was thoroughly tested for load-bearing capacity. A box girder was laid out atop the pier, running its full length and nearly reaching across its full width. Over the top was draped a network of wire-rope cables from which were hung platforms extending out along each side of the pier for its full length. Timbers for the platform were supported on I-beams cantilevered out from girders bolted to the sides of the pier at a point about one-third up from the bottom. The outer ends of the steel beams rested on pipes laid out parallel to the long sides of the piers, and supported by the cables strung over the box girder and coping.

Tons of sand were then dredged from the Vistula and pumped onto the platforms. Sides were built around the edges so that platforms could hold the required tonnage for critical testing. Timber lagging was extended upward even beyond the tops of the piers in order to contain the huge quantities of sand needed for

Tracks alongside each pier carried 4-wheel carts for rolling tee-beam sections into position for the Nowy Targ bridge. They were lowered onto the pier seats by jacks, then tied together with post-tensioning rods.

SECOND LARGEST DAM IN THE U. S., at Glen Canyon, Ariz., will incorporate two of these 2,800 ft. diversion tunnels. Frazier-Davis equipment runs dependably, stays on the job, thanks to the Texaco Simplified Lubrication Plan.



Glen Canyon tunnel borings nearing completion with Texaco Plan

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This is Frazier-Davis Construction Company's job: to bore the east side diversion and service tunnels, with a combined length of 2½ miles, through the walls of Arizona's Glen Canyon. It's a vital project, part of the Bureau of Reclamation's $760 million development of 10,000 square miles of arid land. On a job as big as the Glen Canyon Dam, on-time completion of every phase is absolutely essential. And that puts a priority on dependable equipment performance.

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Texaco Universal Gear Lubricant EP—keeps differentials and transmissions running smoothly at low cost.

small-craft type of navigation on the Vistula. High-strength steel, testing 52 kilograms/square millimeter, is supplied by steel mills in southern Poland, and shipped by rail and water to the site. Permissible stress is 23 kilograms/square millimeter. A yard and storage plant were laid out along the left bank of the river, immediately upstream from the bridge. A large gantry handled materials, loading steel members onto barges that were floated out to the spans.

Steel erection started at the fourth pier from the left bank, or Warsaw side, and proceeded across to the fifth pier. For this first span, three temporary bents of timber piles and structural steel were set up at equal spacing between the two piers. A stiffleg derrick on a barge lifted the steel members into position, and they were riveted in place. After this initial span was completed, steel erection proceeded on the two adjoining spans. Steel was cantilevered out, with the span in place used as an anchorage. Only one temporary erection bent was needed for each remaining span.

The 85-meter (279-foot) prestressed-concrete portion on the left-bank approach is divided into four spans ranging in length from 16.6 meters (54 feet) to 25 meters (82 feet). Reinforced-concrete columns, 12 meters (39 feet) high and 80 centimeters (31½ inches) in diameter, support the double decks of these approach spans. Decks were laid out on an elaborate system of form scaffolding that also supported the two beams for each deck. Both beams and cross stringers were post-tensioned at the site. The right-bank approach is of similar construction, and both prestressed sections connect with the tunnel and structural steelwork on either side.

Unique type of lightweight, low-cost, composite steel-beam and prestressed deck slab bridge near Kielce. This single-span structure is 67 feet long.

Bureau of Reclamation Photos

When the new structure is opened to traffic this year, it will be named the Stefan Starzynski Bridge after the mayor of Warsaw who was killed in World War II.

Bridge building active

Ever since the end of the war, the Central Board of Highways and Bridges has been active in every part of Poland replacing destroyed bridges. A different type of long bridge, recently completed, is the 248-meter (813 feet) structure near Bialobrzegi that carries the Warsaw-Krakow highway over the Pilica River. This structure has four 62-meter (203-foot) reinforced-concrete arch spans. All but one span were completely demolished. The three new arches were cast in place.

Prestressed-concrete bridge work got started in Poland in 1953 with the construction of a small 12-meter (39-foot) span on a secondary road near Kielce. The at-the-site post-tensioning method was used. Since then, there has been a considerable amount of prefabricating of bridge elements in factories to take advantage of the economies resulting from precasting a number of standardized products with the one operation. Standard small bridges, 14-meter (46-foot) span, are being designed and built of prestressed concrete for 60 and 80-ton loading on secondary roads.

For short-span structures and culverts, a plant in Kielce is producing prestressed planks, 20 centimeters (8 inches) wide × 4 to 6 centimeters (1½ to 2 inches) thick. Planks may be used for deck forms and are left in place after a pour. They are shored

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(Continued from preceding page)

New 813-foot 4-span reinforced-concrete bridge over the Pilica River on the Warsaw-Krakow highway. The arches were cast in place.

up during the pour, since they lack sufficient stiffness to be self-supporting.

Unique methods and design

Some ingenious methods are used in the precasting and erecting of larger structures. A new bridge over the Bialy Dunajec River at Nowy Targ has a superstructure of nine double-tee sections, 85 centimeters (33½ inches) wide on top × 1.2 meters (3.9 feet) deep × 40 centimeters (16 inches) wide on bottom. In length the bridge has three spans, each 30 meters (98 feet). After the two piers and two abutments were built, timber falsework was erected along one side of the bridge to support a working platform on which the tee-beams were precast and post-tensioned.

As each 30-meter tee-beam was completed, it was moved into position by means of a supporting carriage at each end. The carriages ran on rails, with their cross ties resting on girders. Timber cribs supported the girders at the necessary height, so that the heavy tee-sections could be lowered into place on the piers and abutments. The tee-beams were later tied together transversely in a post-tensioning operation.

North of Kielce, over the Berezow-Kamionka River, Polish engineers have designed a unique steel-and-concrete composite structure with a single span of 20.5 meters (67 feet). It has a 7.5-meter (24.6-foot) roadway and a 2-meter (6½-foot) sidewalk for pedestrians. The superstructure consists of five steel stringers, 55 centimeters (21½ inches) deep, with the top flange incorporated compositely into a 16-centimeter (6-inch) prestressed-concrete deck slab. Beams are spaced at 2.2 meters (7 feet).

Before the beams were erected, symmetrical diamond patterns were cut from the web with a torch. The sections removed were then welded to the flanges above and below the cut-out areas. Vertical stiffeners were added. As a result of this operation, the moment of inertia of a beam was increased 3½ times, while its total weight was only 1.1 times as great. The weight of the span is only 5 tons per meter of length, and the result is a lightweight yet strong structure with economy in materials. THE END

Clement Dump-Trailers

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PLANT: P. O. Box 807, Minden, Louisiana

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402 W. Foothill Blvd. Azusa, California

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Road Machinery & Supplies of Duluth
Duluth
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CLEMENT DUMP TRAILERS

COPIED . . .

Few products in the heavy construction industry have ever been so persistently copied as the Clement cable operated Dump Trailer.

. . . but not equalled

Many have tried, yet no one has ever been able to duplicate the roadability, speed and operating simplicity *of the original Clement design.*

Now available, from Clement in Cable lift, Hydraulic-lift, and in two new Bottom-dump models, there is an *original* Clement dump trailer exactly sized to your hauling needs.

Check on the Clement line before you order your next unit. Clement Trailers have been copied . . . but not equalled.

CLEMENT-BRASWELL, INC.
Shreveport, Louisiana
PLANT: Minden, Louisiana

Clement

For more facts, use Reader-Reply Card opposite page 18 and circle No. 254

Roebling's Sons branch moves to new quarters

The San Francisco, Calif., district offices and warehouse of John A. Roebling's Sons Corp., Trenton, N. J., have been moved into a new building at 340 Roebling Road, South San Francisco. The new structure has a prestressed-concrete double-tee slab roof covering 20,000 square feet of floor space.

Roebling is a subsidiary of The Colorado Fuel & Iron Corp., New York City.

New plants opened by Gardner-Denver Co.

A new plant for the production of pumps and mining equipment has been opened in Johannesburg, South Africa, by the Gardner-Denver Co., Quincy, Ill. The new plant is comprised of two buildings with a total floor area of 44,760 feet. Both buildings feature saw-tooth construction to provide overhead natural lighting in work areas.

Forging operations—for the production of construction, mining, and petroleum equipment—are well under way at the new Denver, Colo., plant of Gardner-Denver. Located on a 30-acre site, the main plant building is a 36,000-square-foot prefabricated steel structure, which measures 150 × 240 feet.

IRF elects Steelman chairman of the board

Julien R. Steelman, president of the Koehring Co., Milwaukee, Wis., has been elected chairman of the board of directors of the International Road Federation. He succeeds H. S. Merriman, who has retired from the Socony Mobil Oil Co., Inc., New York City. Replacing Merriman as a member of the IRF board is F. E. Powell, vice president of Mobil Overseas Oil Co., Inc.

Julien R. Steelman, chairman of the board of directors of the IRF.

Steelman has relinquished his post as president of the American Road Builders' Association. He is also a former president of ARBA's Construction Industry Manufacturers Association.

A HEAPED LOAD IN 20 SECONDS is picked up by this Michigan 110 tractor-scraper grading for a new shopping plaza at Middletown, Conn. A pair of the 10½-yard heaped-capacity rigs, push-loaded by an International crawler tractor, is moving 1,300 to 1,400 yards of gravelly clay daily on the job.

Rural road organizations subject of report by HRB

Highway Research Board Special Report 37, "Administrative Structure of Local Rural Road Organizations", contains basic information on the setup in each state, Hawaii, and Puerto Rico. The information is based on material received in answer to questionnaires.

Priced at $1.20, the bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

NSA elects officers

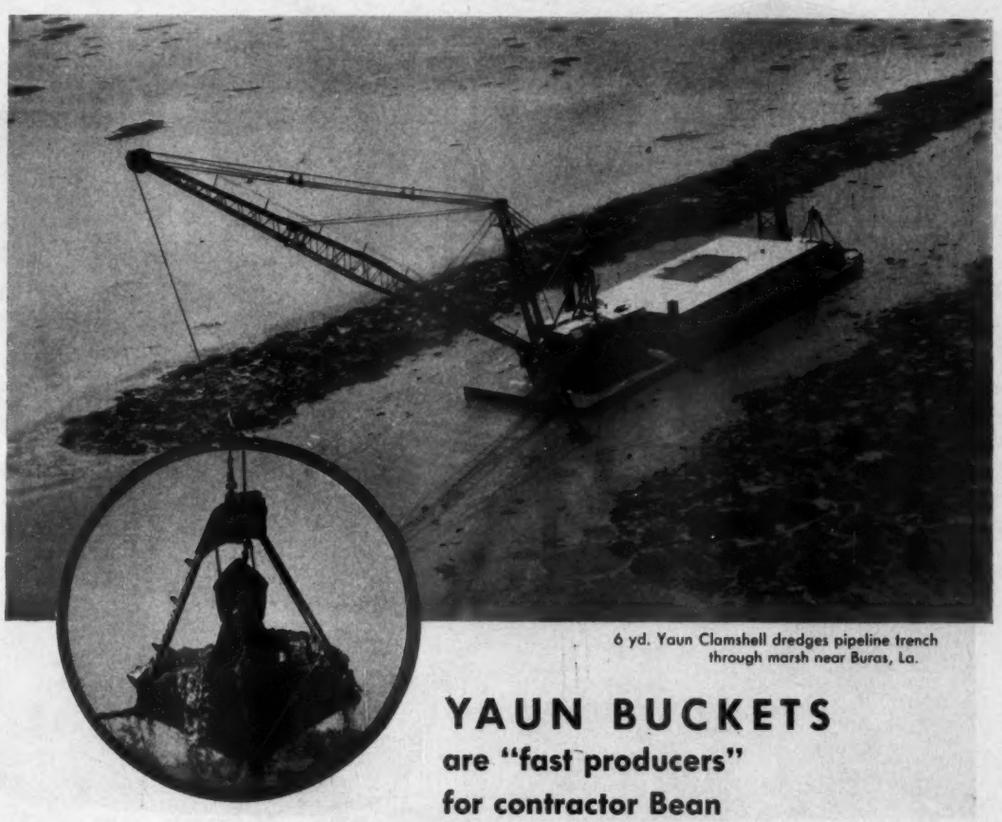
Charles W. Ireland has been elected president of the National Slag Association, succeeding A. W. Wood. Other newly elected officers include H. N. Snyder, vice president; E. W. Bauman, managing director; and W. S. Shaw, treasurer. A. W. Wood, Edward C. Levy, W. Kenneth Dorman, and C. A. Barinowski were elected members at large of the executive committee.

Movie on Heliarc welding

An 8-minute color, sound 16-mm movie is available without charge from Linde Co., Division of Union Carbide Corp., 420 Lexington Ave., New York, N. Y., or from any Linde office. Titled "Introduction to Manual Heliarc Welding", it is designed for beginners.

I think there is only one quality worse than hardness of heart, and that is softness of the head.

—Theodore Roosevelt



6 yd. Yaun Clamshell dredges pipeline trench through marsh near Buras, La.

YAUN BUCKETS
are "fast producers" for contractor Bean

C. F. Bean, Inc., Plaquemine, La., owns the big barge-mounted dragline shown here dredging for an oil production company. Material is mud with layers of very hard and abrasive sand.

To match every digging condition, Bean has equipped his two dredges with four Yaun Buckets—a 6 yd. Clamshell, Round-nose Stump Bucket, 6½ yd. Straight Marsh Bucket and 6 yd. medium-duty Dragline Bucket.

These buckets were developed jointly by Yaun designers and Mr. Bean, who says: "We worked together to develop a bucket that would produce the most in the least amount of time. Yaun Buckets are less expensive than many others, yet they outperform all others. Our two rigs consistently outproduce larger equipment, operating side by side and on the same job."

When you have need for a standard bucket, or a special, this engineering and manufacturing experience is at your command.

Yaun Manufacturing Co., Baton Rouge, Louisiana.

YAUN

DRAGLINE BUCKETS (⅜ to 40 cu. yds.)

CLAMSHELL BUCKETS (¼ to 15 cu. yds.)

CONCRETE BUCKETS (½ to 2 cu. yds.)

THE BUCKET THAT'S BUILT TO LAST!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 255

Faster . . . Faster . . . Ten times faster

That's how earthwork computation is being done by one highway department with an electronic computer

by CHARLES Y. WYNN and EARL W. SCHROEDER
Remington Rand Univac Division, New York, N. Y.

When one method accomplishes work ten times faster than a second method, it gets plenty of attention.

This is a simple explanation of the mounting interest in electronic computers, which now enable highway engineers to perform earthwork calculations ten times faster than by manual methods, at a fraction of the cost, and with absolute accuracy.

One Western state, which is using a Remington Rand Univac 120 computer, reports that only in the first five months of operation did the cost of electronic computation exceed that of manual figure work, which was $150 per mile. In the sixth month, the cost per mile dropped to the $150 level; in the seventh month it fell off sharply to less than $75; and it has been steadily decreasing ever since. By the beginning of this year, the cost was expected to be well under $50 per mile, less than one-third of the manual-computation figure.

Computer operations

This computer, Univac 120, operates from standard punched tabulating cards. The computer converts cross-section plus and minus elevations into actual ground elevations at the rate of 800 separate elevations per minute. It computes the rate of super and widening, if necessary, for alignment calculations; and it calculates tangent elevations, vertical curve correction, and center-line cut and/or fill, together with station elevation equations, at the rate of 9,000 stations (100-foot distances) per hour.

Univac 120 also calculates grade changing at the rate of 90 stations per minute, and computes and prepares mass diagrams in tabular or printed form. The computer eliminates the need for planimeters and desk calculations by electronically computing the preliminary estimates of areas and volumes, by calculating and verifying final estimates, and by automatically comparing preliminary with final estimate figures to pinpoint discrepancies.

Actual procedure

The basic procedure begins with the automatic conversion of plus and minus elevation data (rod readings)

(Continued on page 14)

B.F.Goodrich

These B.F.Goodrich tires still going strong after 51,456 miles of rugged construction work

WALLACE, KINNEY AND LOCHRIDGE TRUCKING CO. of San Mateo does construction work all over California. Here the job is hauling fill dirt for runway expansion at San Francisco International Airport. Trucks travel both on and off the road carrying loads as heavy as 27 tons.

In spite of these rugged working conditions, the B.F.Goodrich FLEX-RITE NYLON Rock Logger tires above have already given 51,456 miles of service, still have plenty of tread left. The company finds B.F.Goodrich tires can be retreaded 2 and sometimes 3 times!

One reason for this outstanding record is the thick Rock Logger tread that's specially compounded to resist rock cuts and bruises. Another reason is the B.F.Goodrich FLEX-RITE NYLON cord body which withstands double the impact of ordinary cord materials. It resists heat blowouts and flex breaks, too. No wonder B.F.Goodrich FLEX-RITE NYLON cords outwear even extra-thick treads, can be retreaded over and over!

Your B.F.Goodrich Smileage dealer has a money-saving tire for every construction job. See him today. He's listed under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *truck tires*

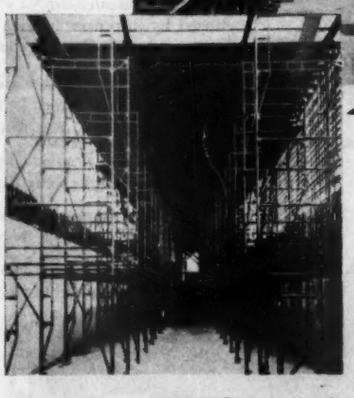
© The B.F.Goodrich Company

For more facts, use Reader-Reply Card opposite page 18 and circle No. 256

ADVANCE Scaffold cuts labor costs . . . on world's largest filtration plant

When completed, Chicago's Central District Filtration Plant will provide filtered water to about 3,000,000 people in the northern section of the city. Total cost, including connecting tunnels will approximate $95 million. The ADVANCE Scaffold used on the project was furnished by Riverside Sales Contractors Equipment, Inc., Brookfield, Illinois.

Carpenters are preparing to lay stringers and plywood panels on ADVANCE Scaffold shoring towers prior to a pour.



ADVANCE shoring in place for Filter Sub-Structure.

When it comes to making a profit on low-bid narrow-margin jobs, the equipment used and the engineering service behind it can well mean the difference between profit and loss. That's why it's essential to select building construction tools that are designed for fast, dependable, economical production . . . tools that will handle any job that comes along on a high output level regardless of time schedules.

Such was the problem facing the Gust K. Newberg Construction Company in their work on Chicago's $95 million Central District Filtration Plant. The structure, largest of its kind in the world, is a complicated maze of walls, conduits and pipe galleries that consumed in excess of 100,000 cubic yards of concrete in the making. The 562,000 square feet of slab area was supported for shoring with towers of standard ADVANCE Scaffold panels erected to the exacting specifications of the Chicago Department of Public Works. The contractor could ill afford error in computing requirements for materials and man power.

Newberg officials kept close watch on the cost of labor for erecting the shoring scaffold. Their figures showed that 2 carpenters and 1 laborer could erect a scaffold tower 3 panels high, with jacks in place, every 12 minutes. Computed against the hourly scale of carpenters and laborers, Newberg's cost was less than 3 cents per square foot of slab area . . . upwards to 50 percent less than the average cost for this type of work.

Similar high efficiency at low cost is characteristic of construction jobs everywhere that are using the ADVANCE Scaffold system. Check with any contractor-user, or contact BEAVER-ADVANCE for complete information that will help you cut scaffolding and shoring costs on coming work.

Beaver-Advance CORP. — *Ellwood City, Pennsylvania*

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SIGN OF QUALITY-VALUE-SERVICE

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 257

(Continued from page 12)

into actual ground elevations.

Working from data recorded by the original survey party in their field notes, an operator at a key-punch machine uses tabulating cards representing separate 100-foot stations. Each of these cards is punched to contain the project number, station number, height of instrument, centerline grade elevation, and individual cross-section plus or minus elevations and distances to the left and right of the center line. After the cards have been mechanically verified and interpreted, they are combined with a deck of blank cards and fed to the Univac 120.

Operating at the rate of 38 stations per minute and allowing up to 20 individual readings per station, the computer automatically converts the plus and minus readings into actual elevations and punches the results into the blank cards. The computer internally checks its own accuracy step by step so that no second pass of the cards is required.

The cards from this computation can be mechanically tabulated into a station ground-elevation register, or they can be fed directly to an electronic plotting device for an automatic plotting of the "profile", the actual contour of the road in terms of its grade, the elevations of its points of intersection (PI's), and tangent grades. Vertical curve lengths and maximum correction factors are then determined and recorded on the profile.

With the completed profile serving as a source document, the following data is now key-punched into a reproduced set of the elevation cards: tangent elevation at each PI; tangent grade in the first section affected by such grade; and vertical curve length and vertical curve maximum-correction factor in the first section of the curve. Actual key-punching need be done only on the first station card affected by a PI and a vertical curve; all repetitive data is retained in the machine for punching into subsequent cards automatically.

The cards created in this way are the basic materials for a complete, automatic series of earthwork calculations on the electronic computer, which performs the necessary arithmetic for each 100-foot station in sequence, at split-second speeds and with perfect accuracy.

Earthwork report

After processing, the cards are listed on the mechanical tabulator to produce the earthwork computation report. This is a document which, in addition to its value as a printed record of the job, can serve as the medium for plotting grade elevations on cross-section sheets.

The computer offers speed and simplicity in the job of calculating grade changes: cards representing stations affected by the change are automatically adjusted at the rate of about 90 stations per minute. Alignment curve widening and banking are similarly fast, automatic procedures.

Computing preliminary estimates of areas and volumes—previously a tedious job involving planimeters and desk calculators—is a matter of quick electronic routine, as is the calculation of final estimates and comparison of preliminary and final figures.

A recent time study reveals that it takes 30.99 minutes to complete the figure work for a 100-foot section of roadway by conventional methods, and that the new equipment does the same job in 2.972 minutes, less than one-tenth the time. THE END

Mobil

Paves the Way

FOR LONGER EQUIPMENT LIFE!

With Mobil's Contractor PM System, it's easy to reduce breakdown causes that delay job completion.

Looking for a sure-fire way to help prevent equipment breakdowns caused by improper lubrication? Use Mobil's simplified Contractor PM System that reduces paper work to a minimum, too.

This helpful system, devised especially for contractors, is a key part of Mobil's Correct Lubrication Program, an overall plan that also includes these important Mobil aids:

Famous Quality Products such as Delvac Oils, New Mobilube GX Multipurpose-type Gear Lubricant and Mobilgrease.

Lubrication Engineering Service covering analysis, advice and use of Mobil's outstanding technical know-how and show-how.

Get in touch with your Mobil representative. He'll be glad to show you how valuable this system can be.

CONTRACTOR PM SYSTEM INCLUDES:

1. Record Folder—provides identifying data for each piece of equipment, holds equipment records.
2. Operator's Recommendation Chart—lists the correct lubrication recommendations for each piece of equipment.
3. Weekly Service & Inspection Report—an up-to-date record of mechanical condition of equipment, work to be done or completed.
4. Delivery Ticket—lists petroleum supplies delivered to equipment on the job.
5. "Squawk" Sheet—used by equipment operator to point out trouble spots that need attention.

Mobil

Available—film on equipment safety, maintenance. Call nearest Socony Mobil office.

Correct Lubrication

ANOTHER REASON YOU'RE MILES AHEAD WITH MOBIL

SOCONY MOBIL OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 258

Thew Shovel forms Marketing Division

The Thew Shovel Co., Lorain, Ohio, has formed a Marketing Division for the company's line of power shovels and cranes and its Moto-Loader front-end loaders. Sales, marketing staff, and parts and service are the major areas affected.

D. L. Douglass, in the newly created post of director of marketing, will administer the new division. J. F. Beles has been named manager of parts and service, with headquarters in Elyria, Ohio; and J. L. Beltz is manager of marketing staff, with over-all supervision of the product development, market research, advertising and sales promotion, and training departments.

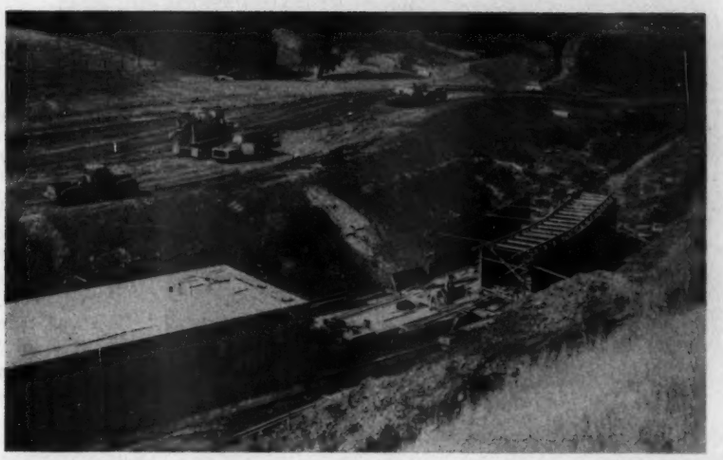
C. S. Weber is now advertising and sales promotion manager; Q. J. Winsor, product development manager; and Lou Radakovich, training manager. Field sales and distribution activities will continue to be handled by G. E. Gunther, sales manager for shovels and cranes; W. H. Madden, sales manager for loaders; and F. S. Battin, export sales manager.

Hobart names director of its technical school

Howard B. Cary has been named director of Hobart Brothers Technical School, Troy, Ohio. The school, established in 1958 by Hobart Bros. Co., also of Troy, is nonprofit and is devoted to teaching, research, and development in the welding field.

The Hobart School has 120 welding stations for training students in the use of all types of arc and gas welding equipment. It contains classrooms, demonstration areas, an auditorium, technical library, laboratories, and research and testing facilities.

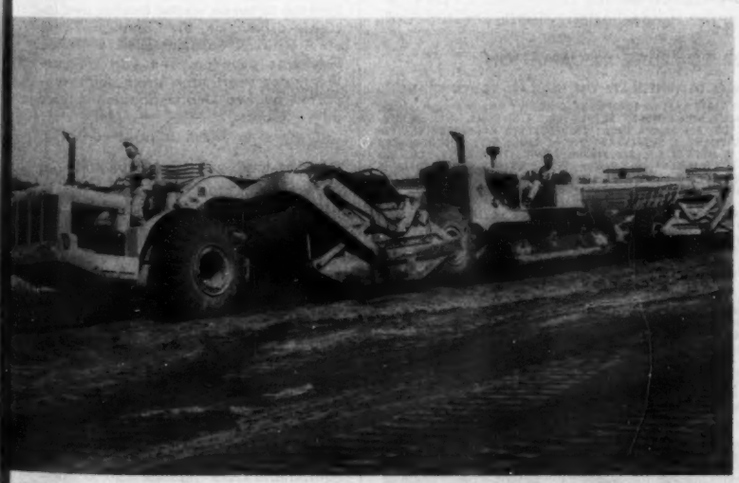
On a fire-wall installation job in Bayonne, N. J., a Model 12 Payloader, owned and operated by Mohawk Constructors, Inc., of Linden, N. J., reportedly loaded stockpile material into dump trucks in nearly one-half the time required by regular tractor-loader operation. Write to The Frank G. Hough Co., Dept. C&E, 822 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 120.



Concrete forming of a double box culvert 1,035 feet long with various curves progressed rapidly in the hands of the Frederickson Watson Ransome Co., of Oakland, Calif., on an Orinda, Calif., job. The firm used 13,000 square feet of Uni-Form panels to form the culvert (9 × 10-foot and 10 × 10-foot double boxes). The panels enabled the contractor to form 180 linear feet of inside wall faces and deck, and 120 linear feet of exterior wall faces. Write to the Universal Form Clamp Co., Dept. C&E, 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 119.

PRODUCTIVITY Key to Profits '59

Equipment application reports



Allis-Chalmers Model TS-260 motor scrapers played an important role in helping the North ina firm, B & G Contractors, to keep its earthmoving production as high as 20 per cent ahead edule on the rebuilding and improvements program at the Seymour-Johnson Air Force Base, boro, N. C. Other Allis-Chalmers equipment on the job included an HD-21 turbocharged r tractor, an HD-20 dozer, and TS-200 and TS-300 motor scrapers. Write to the Allis-Chalmers Co., Construction Equipment Division, Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the t Card at page 18. Circle No. 122.

Nailable steel studs field-welded to the structural-steel framework saved on costs of a 2-story school in Oakland, Calif. Bethlehem Pacific Coast Steel Corp. supplied the steel; Herrick Iron Works, Hayward, Calif., handled erection. Write to Bethlehem Pacific Coast Steel Corp., 20th and Illinois Sts., San Francisco, Calif., or use the Request Card at page 18. Circle No. 121.

The Lorain 85A shovel moves rock for Boso & Ritchie, Inc., on a West Virginia road job. The 2½-yard bucket handled 2,000 yards a day.

Shovel keeps highway job well ahead of schedule

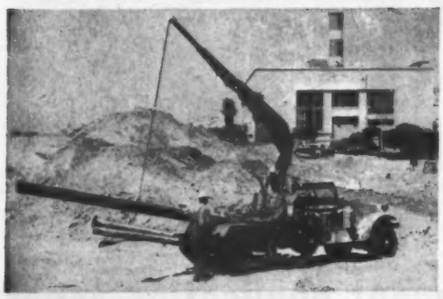
One piece of excavating equipment —the Lorain Model 85A power shovel —with downtime of less than 2 per cent was said to be the key factor enabling a West Virginia contracting firm to stay ahead of schedule on a highway job.

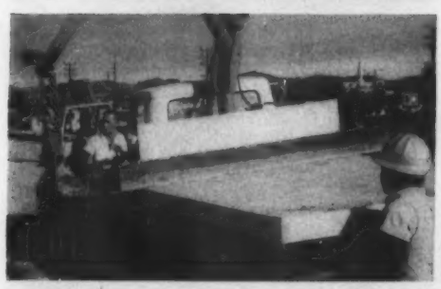
Boso & Ritchie, Inc., of Ravenswood, W. Va., working on a ¾-mile stretch of new U. S. 60 in northwestern West Virginia, was given the job of removing a total of 525,000 cubic yards of earth and rock.

The Lorain 85A, featuring power controls and a 2½-cubic-yard bucket, was pressed into service and moved sandstone, blue shale, and earth at an average rate of 2,000 cubic yards per day. Each bucket load weighed around 5,000 pounds. According to the company, the shovel was down only 3 days out of the first 141 on the job. As a result, in slightly more than half its allotted time of 250 working days, Boso & Ritchie had already completed 75 per cent of the earthmoving task.

For further information write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 89.

LOW COST HIAB 170 PROVES VERSATILE TRUCK CRANE FOR PETER KIEWIT & SONS CO.





The HIAB 170 is an excellent tool for removing header boards and road forms on all types of road construction. HIAB replaces as many as 4 to 6 men in this type of work.

On the $4,000,000 Expansion job for the Hyperion Sewage Treatment Plant in California, Peter Kiewit & Sons Co., in joint venture with Fred J. Early Co., ran into a variety of time consuming lifting, loading, unloading, and materials handling tasks. The contract included a tremendous amount of pipe work — mostly 14 inch and 8 inch cast iron — and pipe sections, fittings, valves, etc. continuously had to be moved from one portion of the job to another. Problems were complicated by the fact that the job site was mostly soft sand, requiring machinery with sufficient floatation and traction to maneuver well without bogging down, while retaining efficient lifting and loading capacities.

To do the work, the Kiewit organization purchased a versatile, fully hydraulic, one-man operated HIAB 170 Crane and mounted it on a surplus half-track truck, as illustrated. The combination proved ideal for meeting all the miscellaneous materials handling jobs on the project. The contractors reported the HIAB 170 handled loads up to 1800 pounds in the soft sand at 13 foot boom length easily and efficiently.

Peter Kiewit & Sons Co. do not limit the use of the HIAB 170 to the Hyperion job. The same model crane worked on their Southern California Gas Co. Compressor Station job in Needles, California, and the firm is contemplating the purchase of additional units for work wherever a low cost, efficient truck mounted crane is required.

The fully hydraulic, one-man operated HIAB 170 is an ideal Contractors' utility tool. It offers a range of lifting capacities from 6000 pounds on the shortened boom of 5 feet to 2500 pounds on a full boom of 13 feet. The boom length is easily adjustable through hydraulic control. The HIAB 170 will lift up to 20 feet above ground level at a maximum speed of 20 inches per second. Control is from either side of the truck cab. Crane action is positive and accurate, with 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15" of space. THIS LEAVES THE ENTIRE TRUCK BED OPEN FOR LOAD. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE FOR COMPLETE INFORMATION

THESE HIAB DEALERS WILL DEMONSTRATE THE HIAB 170 TRUCK CRANE

CARRINGTON CO., Seattle, Wash.; CRAIG TAYLOR EQUIPMENT & SUPPLY CO., Anchorage, Alaska; SHRIVER MACHINERY CO., Phoenix, Ariz.; MOODY SUPPLY CO., Little Rock, Ark.; BROWN-BEVIS INDUSTRIAL EQUIPMENT CO., Los Angeles, Calif.; CONSTRUCTION MACHINERY CO., San Diego, Calif.; CONTRACTORS EQUIPMENT & SUPPLY CO., Fresno, Calif.; DITZ BROTHERS CO., Santa Clara, Calif.; McCORMICK & MORGAN CO., San Francisco, Calif.; TAYLOR JETT CO., San Gabriel, Calif.; SHASTA TRUCK & EQUIPMENT CO., Redding, Calif.; WESTCOTT EQUIPMENT & MFG. CO., West Sacramento, Calif.; ACTION EQUIPMENT CO., Stockton, Calif; JACOBS-KERR CO., Denver, Colo.; ART C. NEELY, INC., Honolulu, Hawaii; AXLE EQUIPMENT SALES CO., Cicero, Ill.; KANKAKEE ENGINEERING, INC., Chicago, Ill.; SOUTHERN IDAHO EQUIPMENT CO., Idaho Falls, Twin Falls, Boise, Ida.; GIERKE-ROBINSON CO., Davenport, Iowa; PECAUT EQUIPMENT CO., Sioux City, Iowa; NEWLIN MACHINERY CO., Kansas City, Kans.; F & H EQUIPMENT CO., INC., Shreveport, La.; H. S. FINKE CO., New Orleans, La.; AUTO TRUCK EQUIPMENT CO., Detroit, Mich.; CONTRACTORS & INDUSTRIAL SALES CO., Grand Rapids, Mich.; W. B. THOMPSON CO., Iron Mountain, Mich.; LAKESHORE ENGINEERING CO., Iron Mountain, Mich.; HAYDEN-MURPHY EQUIPMENT CO., Minneapolis, Minn.; W. B. THOMPSON CO., Virginia, Minn.; LAKESHORE ENGINEERING CO., Duluth, Minn.; O. B. AVERY CO., INC., St. Louis, Mo.; CLINE TRUCK CO., Kansas City, Mo.; GENERAL SUPPLY CO., Kansas City, Mo.; MERLE KELLY JEEP & EQUIPMENT CORP., Kansas City, Mo.; HALL-PERRY MACHINERY CO., Billings, Butte, Great Falls and Missoula, Mont.; RENO EQUIPMENT SALES CO., Reno, Nev.; RIO GRANDE SALES & ENGR. CO., INC., Albuquerque, N. Mex.; SMITH, INC., Fargo, N. Dak.; THE EMERALD MOTOR CO., Tallmadge, Ohio; CRAMER MACHINERY CO., Portland, Ore., Eugene, Ore.; LATROBE MACHINERY CO., Latrobe, Pa.; PECAUT EQUIPMENT CO., Sioux Falls, S. Dak.; COASTAL PLAINS SUPPLY CO., Dallas, Tex.; COMMERCIAL BODY CORP., San Antonio, Tex.; CONTRACTORS EQUIPMENT CO., El Paso, Tex.; R & W CONCRETE PRODUCTS, Houston, Tex.; YELLOWHOUSE MACHINERY CO., Lubbock, Tex.; FLINCO, INC., Salt Lake City, Utah; FERRIS EQUIPMENT CO., Spokane, Wash.; Washington Machinery CO., Seattle, Wash.; ANDERSON EQUIPMENT & SUPPLY CO., Milwaukee, Wisc.; STUDER TRACTOR CO., Casper, Wyo.

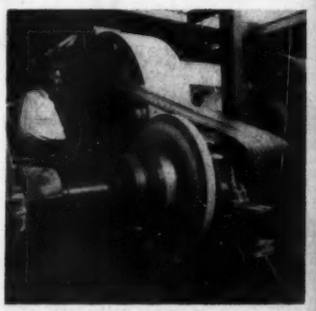
Stanco
MFGS. & SALES INC.
1666 9th St. (Corner of Olympic & 9th St.)
Santa Monica, California

For more facts, use Reader-Reply Card opposite page 18 and circle No. 259

Jaw crusher is speeded by dry fluid coupling

Before the installation of a Dodge Flexidyne dry fluid coupling, the huge jaw crusher at the traprock and asphalt plant of Arborio & Sons, Farmington, Conn., was driven by two wide flat belts. With the new drive arrangement, the two pulleys have been retained for their flywheel effect.

The crusher is powered by a 150-hp 700-rpm motor. Starting load is estimated to be about 200 per cent of the running load, which is just under 150 horsepower. This high-inertia starting load put a heavy strain on the drive and previously required special electrical controls.



Seeking to speed up the crusher and increase production, the Connecticut firm of Arborio & Sons installed a Dodge Flexidyne coupling. The unit connects the motor shaft to a drive shaft supported by two Dodge double-interlock pillow blocks.

The 27-inch Flexidyne has eliminated starting shock and brings the crusher up to full speed within from 20 to 25 seconds without expensive controls when started twice a day, according to the firm. Besides cushioning the starts, the dry fluid drive also protects the motor and other equipment from damage due to overload.

For further information write to the Dodge Mfg. Corp., Dept. C&E, 1944 S. William St., Mishawaka, Ind., or use the Request Card at page 18. Circle No. 54.

One Trojan Model 404 tractor shovel handles the entire production setup at the Daniel Goff Co. sand and clay plant, Millville, N. J. Before the Trojan was put to work, four units—a crawler-loader, a rubber-tire loader, and two rear-dump trucks—were employed to handle the three separate but related operations comprising the main phase of the company's production. These include: maintaining the sand and clay hoppers at full working capacity; loading trucks from the sand stockpile; and loading gondola cars at the railroad siding. According to the Goff firm, the Trojan 404 handles the whole operation faster and more efficiently than the 4-unit team it replaced. For further information write to the **Yale & Towne Mfg. Co.**, Contractors Machinery Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 94.

A 1,700-pound concrete slab is lifted into position between a precast-concrete column and mullion to form a wall of a vocational high school addition in Joliet, Ill. A single tractor can place 15 to 20 of the panels a day.

Rig utility tractor on prestress job

Illinois Mason Contractors, Inc., of Wheaton, Ill., put an International 350 utility tractor, equipped with Kirkhoff high-reach fork-lift, to work handling precast, prestressed-concrete building materials.

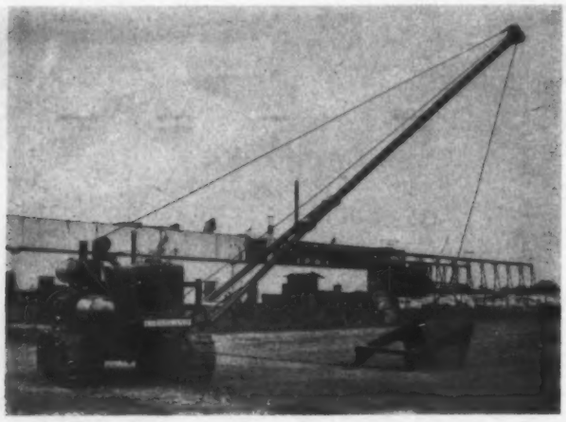
The firm, working on the construction of a 2-story vocational high school addition in Joliet, Ill., used the highly maneuverable machine to move mullions, slabs, and steel framing members from stockpiles to the building site. The tractor and fork-lift, with a capacity rating of 4,200 pounds at 18-inch load center, easily lifted precast-concrete building parts into position.

First, the tractor was used to press steel framing members up into precast slots in the concrete beams at ceiling levels. With the steel frame in place, the operator raised 5-foot × 7-foot × 2-inch concrete slabs, weighing about 1,200 pounds, into position between precast mullions and columns to form the wall of the building.

The International unit also serviced steel workers and masons on the second floor with materials and equipment.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 83.

Concrete
On the Indiana Toll Road they saved $9,740,000 by paving with CONCRETE
Actual cost figures for the two types of pavement tell the story!
Indiana Toll Road engineers drew up designs for both types of pavement . . . each to carry the same axle loads, each to be the best of its type. Realistic comparison of all paving costs, from grading and subbase preparation to finished surface, gave the answer: Concrete would save $62,436 per mile!
Indiana's experience demonstrates once more that concrete can give lower initial cost. And you get a pavement of mathematically accurate load-bearing strength—with a safety factor for overloads.
Add to this, concrete's life expectancy of 50 years and more, with far lower maintenance costs. Add "thump-free" smoothness that pleases the public . . . and the all-weather safety the grainy surface gives. On Interstate and all heavy-duty highways, modern concrete puts quality within your budget.
Concrete gains strength year by year—up to 20% in the first 5 years. Tests of flexural strength prove that only concrete gives this load-bearing "bonus."
PORTLAND CEMENT ASSOCIATION
A national organization to improve and extend the uses of concrete
For more facts, use Reader-Reply Card opposite page 18 and circle No. 360



Backfilling on a Georgia gas pipeline, the Cleveland Model 190 is said to have nearly doubled production for its owner. The unit was recently equipped with a new water-cooled throw-out clutch for continuous, fast operation.

Machine backfills 8 miles of trench in 13½ hours

Faced with an 8-mile lag in backfilling numerous sections of open trench, H. C. Price Co.'s one-man-operated Cleveland Model 190 backfiller filled in 40,000 feet of trench in 13½ hours, bringing the trench-filling operation up close behind the lowering-in gang.

The trench for the 20-inch natural gas line was 4 feet wide and 5 feet deep. Spoil was mostly sand and Georgia red clay, with some rock, stumps, and logs.

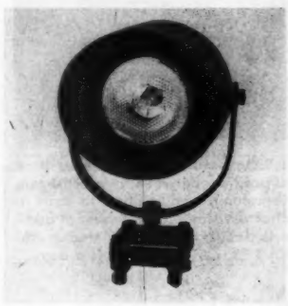
According to the contracting firm, the operator consistently made 15 passes per minute with the machine's 7 × 3½-foot scraper board.

For further information write to the Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 33.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 261

Floodlights on shovel give maximum lamp life

Installed on a Harnischfeger 6-cubic-yard-capacity shovel engaged in digging limestone rock for a minimum of 40 hours per week, Sturdilite Model 120 floodlights using 150-watt



PAR 38 lamps reportedly demonstrated outstanding lamp life.

The shovel was in operation at the Dewey Portland Cement Co., in Davenport, Iowa.

One bulb shook loose twice but was tightened and lasted more than six months before burning out. The bulbs in the other fixtures did not loosen and lasted a month longer. The fixtures themselves were undamaged.

For further information write to the Phoenix Products Co., Metal Spinning Division, Dept. C&E, 4715 N. 27th St., Milwaukee 9, Wis., or use the card at page 18. Circle No. 95.

Payroll, job time cut with bituminous paver

Use of a Tanco Bit Paver on a recent Indiana Toll Road resurfacing job resulted in a 30 per cent payroll saving, according to toll-road authorities.

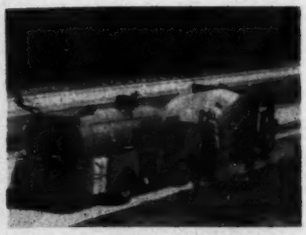
The job entailed resurfacing of the 10-foot outside berm and 8-foot inside passing berm along the full 157-mile length of the road. With conventional equipment and materials, it was expected that the job would take two construction seasons, tie up valuable manpower and equipment, and close a traffic lane for long stretches.

With the Bit Paver, however, 152 miles of outside berm were resurfaced in just 8 days. The only reason work was discontinued at this point was

Two new 12×10-inch wellpoint pumps were employed to dewater 15½ acres from one central pumping station on a sewage-treatment plant for the city of Wichita, Kans. Contractor for the job was Dondlinger & Sons Construction Co., of Wichita; the wellpoint system was designed by the John W. Stang Corp. The site of the plant was a scant 300 feet from the Arkansas River, and was successfully dewatered in spite of a 20.5 average river head and a 7½-inch rain storm. Besides the obvious saving in operator expense, there reportedly was also a saving of fuel and standby equipment, and greater ease in servicing these units. For further information write to the **John W. Stang Corp.**, Dept. C&E, P. O. Box 631, Bell, Calif., or use the Request Card at page 18. Circle No. 38.

that all scheduled bituminous material had been placed.

During the 8-day period, the Bit Paver covered 892,000 square yards—an average of 111,500 square yards



This Tanco Bit Paver covered 152 miles of 10-foot outside berm in 8 days.

per day. Tandem and 3-wheel rollers were hard pressed to keep up with the paver, the authorities report. With gravel spread immediately just a few inches behind the spray bar, no follow-up hand-spreading or patching was necessary. Clean edges eliminated the need for hand-brushing and cleaning up.

P. H. Robinson, assistant manager, estimated the 30 per cent payroll saving, greatly increased production, and numerous other advantages as a result of using the Bit Paver.

For further information write to Tanco, Inc., Dept. C&E, 580 Oneida Ave., Akron 13, Ohio, or use the Request Card at page 18. Circle No. 111.

Firm saves $700 per year with truck transmission

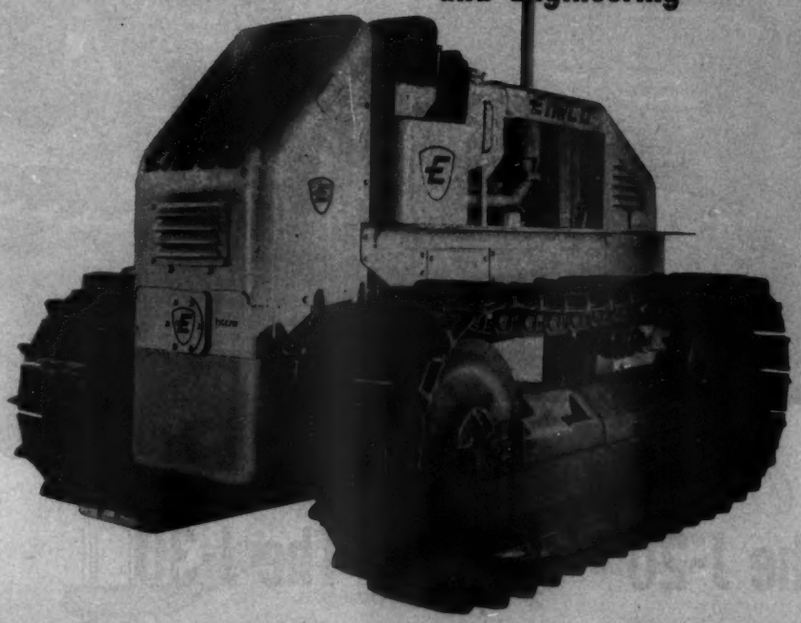
A savings of $700 per year on clutches and axles alone through use of the Chevrolet Powermatic truck transmission is claimed by the New Jersey Silica Sand Co.

The firm reports that formerly it was necessary to change about eight axles and three clutches a year on each of its stick rigs. The estimated repair costs did not include the downtime involved.

Also, the company states, Powermatic transmissions have effected an increase in gas mileage, eliminated engine lugging, and generally contributed to the trucks' longer life.

For further information write to the Allison Division, General Motors Corp., Dept. C&E, P. O. Box 895, Indianapolis, Ind., or use the Request Card at page 18. Circle No. 159.

THE BIG E® ... with Advanced Design and Engineering



The EIMCO 105 TRACTOR introduces a new concept in rugged, efficient and practical tractor design and engineering.

Look at these Eimco features:

- Up-front operator position for unequalled visibility
- Torque-Converter transmission perfectly matched to engine
- Independent Track Drive for spin turns in own length
- Center-mounted power unit for better traction and balance
- Track Oscillation for easy operating mobility on all surfaces
- One piece cast alloy-steel track rollers, liquid flame hardened
- Instant reversal with one control lever for each track
- Many others we'll be glad to demonstrate and explain

Contact the nearest sales office of The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah.

THE EIMCO CORPORATION • SALT LAKE CITY, UTAH

EXPORT OFFICE, 51-52 SOUTH STREET, NEW YORK, N. Y.

BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

B-378

For more facts, use Reader-Reply Card opposite page 18 and circle No. 262

Announcing 3 GREAT NEW

The J-20

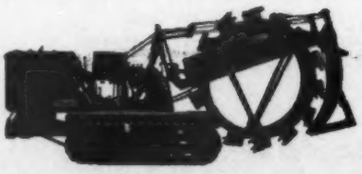
Width over crawlers ..... 4' 10"
Crawler length, C.C. ..... 6' 3"
Overall length .....21' 6"
Width of crawler shoe ..... 10"
Weight ..... approx. 13,500 lbs.
Ground bearing pressure ..... 8.8 psi.
Cuts trench 13" to 24" wide, to 5' 6" deep

Principal applications:
urban areas, utilities lines, services, extensions, mains, house footings, etc.

The J-30

Width over crawlers ..... 6'
Crawler length, C.C. ..... 6' 9"
Overall length .....22'
Width of crawler shoe ..... 14"
Weight ..... approx. 15,000 lbs.
Ground bearing pressure ..... 6.5 psi.
Cuts trench 13" to 24" wide, to 5' 6" deep

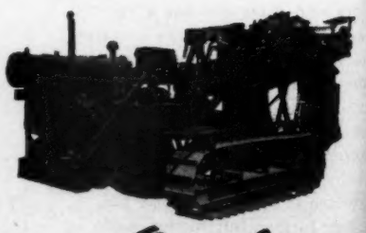
Principal applications:
suburban areas, drainage, utilities, gathering lines, footings, septic tanks, leach beds.



The J-40

Width over crawlers ..... 8'
Crawler length, C.C. ..... 7' 6"
Overall length .....23'
Width of crawler shoe ..... 18"
Weight ..... approx. 18,800 lbs.
Ground bearing pressure ..... 5.6 psi.
Cuts trench 17½" to 30" wide, to 5' 6" deep

Principal applications: trench up to 30" wide —pipelines, waterlines, drainage, irrigation, sewer lines, utilities.



...with the basic Cleveland characteristic... *Quality*

For more facts, use Reader-Reply Card opposite page 18 and circle No. 263

WCLEVELAND TRENCHERS

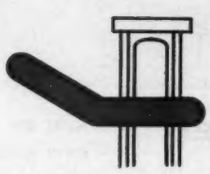
with ...revolutionary new V conveyor

...world's finest trencher crawlers

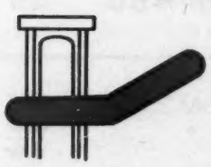
...all operations controlled at operator's seat

V CONVEYOR ... provides maximum clearance under digging wheel rims ...allows higher heaped loads without clogging ... provides constant elevating angle for faster, higher spoil discharge ... reduces rolling and tumbling... has stronger torsion-free construction ... employs huskier, longer-lived bearings.

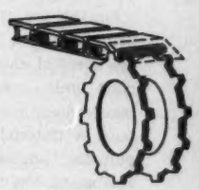
AUTOMATIC CONVEYOR SHIFT ... operator controls hydraulic shifting and positioning of conveyor...digs past poles, trees, shrubs... places spoil where needed ... *all* without leaving seat, without interrupting other operations.



DUAL INDEPENDENT CONVEYOR DRIVE ...identical, self-contained hydraulic motor and planetary gear drives in each head-pulley eliminate *all* conveyor chains and sprockets...reduce belt slippage and wear... furnish operator fingertip control of conveyor belt direction and speed (215-1,000 fpm) independent of all other operations.

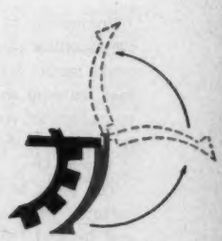


FINEST CRAWLERS ON ANY TRENCHER ... employ double flanged wheels, rollers and sprockets with wide-spaced teeth...drives on each end of 1½" dia. hardened pins ... completely eliminates pockets for dirt, stones, etc. ... eliminates take-up devices ... gives greater track stability ... lengthens wear life ... sprockets, wheels and idlers ride on sealed ball or roller bearings requiring only 200-hour lubrication ... a tremendously long-lived, trouble-free, easy-rolling crawler track.



BIG 16"x3" HYDRAULIC STEERING BRAKES ...controlled by suspended-type foot-pedals ... provide simple easy steering and maneuvering.

HYDRAULIC CRUMBING SHOE ... now, crumbing shoe advantages (cleaning, grading) are practical even in crowded digging ... Cleveland's hydraulic shoe control (optional, extra) pivots shoe back and up to allow setting wheel to required depth at walks, drives, underground obstructions, etc.



Engine, Hoist, Wheel, Shoe, Conveyor Speed—Direction—Shift, Crawlers

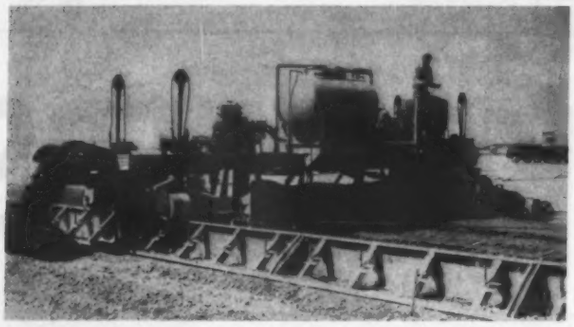
...Every Operation Controlled at Operator's Seat.

Good Everywhere

The CLEVELAND TRENCHER Co.

Pioneers of the Modern Trencher

20100 St. Clair Avenue
Cleveland 17, Ohio



The Standard subgrader did enough work in just two hours to keep four Koehring pavers busy all day. Accuracy of cut varied not more than ¼ inch at depths of 20 to 28 inches.

Subgrader cuts costs on big air-base job

Operating costs were reduced and work kept on schedule on the big concrete pouring job at Beale Air Force Base, Marysville, Calif., with the help of Standard Steel's deep-cut subgrader.

The machine is designed to make cuts up to 30 inches deep, in widths to 25 feet.

On this job, the grade varied from 20 to 28 inches. Traveling at an average speed of about 50 fpm, the Standard unit graded 1½-inch-minus regular base course rock in a 25-foot lane. A Caterpillar D8 was used to pull the subgrader, though lighter equipment could have been used.

In two hours, the machine reportedly prepared enough new subgrade for a day's pour, which was more than 6,000 yards of concrete.

The Lefever Trucking Co., of Sacramento, was the subcontractor handling all subgrading operations.

For further information write to the Standard Steel Corp., Dept. C&E, P. O. Box 58252, Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 79.

Stabilizer plant produces 450 cubic yards per hour

Production of the Pioneer Model 425 stabilizer plant reportedly hit 450 cubic yards per hour of stabilized base material shortly after it was set up, calibrated, and put into operation for its owner, the Central Paving Co., of Salem, Ore.

The plant is available as either a portable or stationary installation, and Central Paving chose the latter set up for its 6-mile paving contract on U. S. 375 between Ritzville and Connell, Wash. Location of the plant was midway between these two points at Lind.

As the initial run started, the company found the plant was producing 370 yards per hour at the outset, although production soon climbed over the rated 425-yards-per-hour mark.

For further information write to Pioneer Engineering, Division of Poor & Co., Inc., Dept. C&E, 3200 Como Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 87.

Automatic blade control speeds fine-grading work

A Caterpillar No. 12 motor grader equipped with Preco automatic blade control cut working time in half on a fine-grading job on Route 41, Camden County, N. J. Public Constructors of Gloucester, N. J., was the contractor.

The work was done in wet clay. The Preco unit automatically controlled the exact slope of the blade, regardless of the position of the grader or the unevenness of the terrain. This permitted the operator to devote his entire attention to the stake line, observing necessary grade changes and keeping the blade at the appropriate depth of cut. His finish pass reportedly effected an accuracy of ⅛ inch in 10 feet.

For further information on this blade-control unit, write to Preco, Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card that is bound in at page 18. Circle No. 44.

NEW DW20
Series G

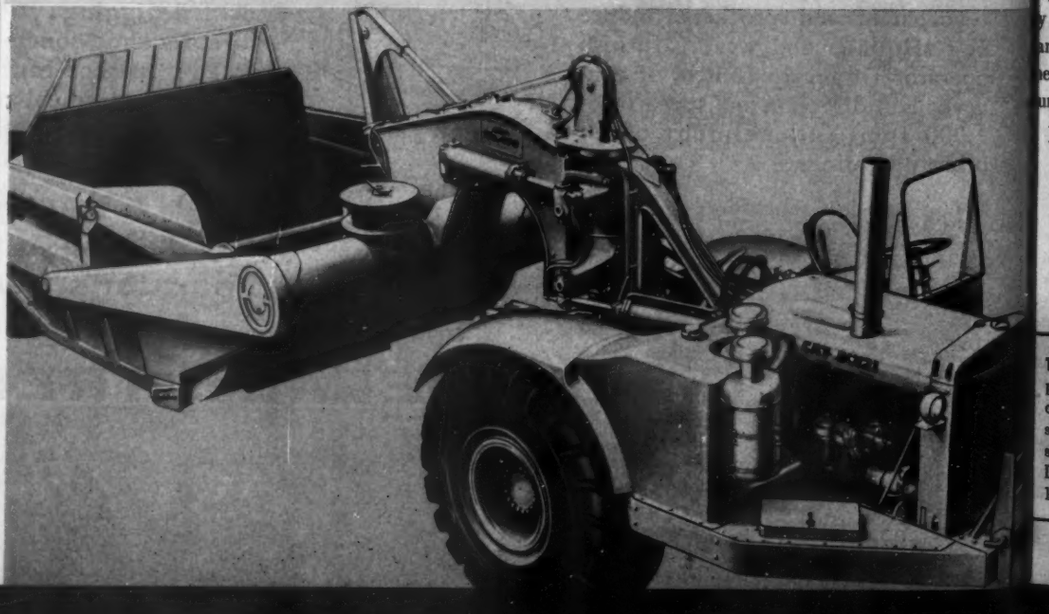
NEW No. 456
Series B

NEW HP —345 (maximum output)—increased 8%
NEW RIMPULL —39,565 lb. (maximum)—increased 12%
NEW SPEEDS —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
NEW CAPACITY—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%

NEW DW21
Series G

NEW No. 470
Series B

NEW HP —345 (maximum output)—increased 8%
NEW RIMPULL —49,100 lb. (maximum)—increased 12%
NEW SPEEDS —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
NEW CAPACITY—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%



Use of liquid sealant shaves repair costs

The Acme Road Machinery Co., Frankfort, N. Y., replaced a 9-inch spherical roller bearing in the jaw of a rock crusher in less than an hour instead of the 3 to 4 days formerly required, and saved $155. These savings were made possible by mounting the bearing with a slip fit and retaining it with Loctite sealant instead of the interference press fit previously used.

Loctite sealant, a thin liquid plastic that hardens only when confined between closely fitting metal parts, comes fully prepared.

In addition to its use on bearings, Loctite is used to lock nuts and bolts, to seal threaded and sleeve joints against fluids under high pressure, to hold hardened sleeves to shafts, and to mount bushings without a press fit.

For further information write to the American Sealants Co., Dept. C&E, 381 Woodbine St., Hartford 6, Conn., or use the Request Card at page 18. Circle No. 85.

Up to 16,000 yards of earth a day was loaded out by these three American 1½-yard shovels working in one pit. In another pit, two more Americans set a similar pace.

Big earthmoving job handled by five shovels

On a 10.3-mile stretch of the Trans-Canada Highway near Chilliwack, Vancouver, B. C., the firm of A. C. McEachern, Ltd., and the Upper Fraser Valley Construction Co. used 150 haul trucks and five American Hoist & Derrick shovels to move over 2 million cubic yards of earth in less than five months.

The 700 Series units reportedly hit production levels of 2,000 yards per machine, per 8-hour shift. These shovels worked 16 hours a day at full production efficiency. A rigid maintenance program kept the machines in top condition.

For further information write to the American Hoist & Derrick Co., Dept. C&E, 63 S. Robert St., St. Paul 1, Minn., or use the Request Card at page 18. Circle No. 46.

Systematic lubrication for earthmoving fleet

With the help of the Petro-engineering Service of the Gulf Oil Corp., a brand-new earthmoving fleet costing about $1 million received lubrication on a systematized chart basis that saved time and money for Clement Bros. and Dickerson, Inc., joint contractors on a big earthmoving and paving job on a section of interstate highway in Newberry County, South Carolina.

Because of the different lubrication requirements of the various machines, Gulf—in collaboration with the contractors and representatives from Euclid and Caterpillar—worked up a master chart.

In addition, this chart served as a guide in setting up a method of keeping on hand the supplies of oil prescribed by Gulf, as well as a systematic procedure to insure lubrication for each piece of equipment as specified on the chart.

Project manager Charles Durham, of Dickerson, reports that "the system is truly scientific lubrication. We can spot on paper any unit that starts to overconsume."

For further information write to the Gulf Oil Corp., Dept. C&E, 1822 Gulf Bldg., Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 97.

CATERPILLAR'S PROJECT PAYDIRT

PROJECT PAYDIRT pays off for you*

NEW CAT DW20 and DW21 SERIES G TRACTORS NOW 345 HP

—plus new high-capacity LOWBOWL Scrapers for faster cycles and higher production!

r down-to-earth facts about these big new Caterpillar s, take a look at the box scores shown here. They mmarize important increases in horsepower, rim- ll, speeds, scraper ratings and tire capacities that y off for you *on the job* with faster cycles, greater oduction and more profit!

Note that the increased HP of the DW20 and W21 Series G, compared with the models they're re- cing, gives 12% higher rimpull. This increased mpull provides up to 20% faster travel speeds der similar haul road conditions. Equally impor- t, this horsepower increase was achieved without y sacrifice whatsoever in the excellent torque aracteristics inherent in the Cat Super-Turbo En- e. Torque rise of the engine in the Series G models nequaled in the earthmoving industry.

In addition to the advantages featured in the box scores, the new Series G Tractors and their matching LOWBOWL Scrapers deliver the *proved* reliability of Caterpillar-built machines. To handle increased horsepower and increased capacity, both have been improved in design and structure. The tractors, for example, have stronger final drive gears and improved transmission shifter forks. The scrapers have stronger bowls, push frames, draft frames and aprons. All these and other improvements result in better service life, less maintenance and lower cost dirt.

Here are modern, heavy-duty wheel rigs geared to the needs of today's highly competitive market—rigs that meet your requirements for moving more dirt at lower cost than ever. Get the complete facts about them from your Caterpillar Dealer. Call him today and set a date for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH PROVED IN THE FIELD

TIRES: 29.5-29 (28-ply rating) are now standard in place of the former 29.5-29 (22-ply rating)—a tire capacity increase of 16% to match the increased scraper capacity, heavier machine weight and higher speeds made possible by more HP. Note: On the DW20 Series G, the front tires remain the same—14.00-24 (16-ply rating).

CATERPILLAR'S PROJECT PAYDIRT

***PROJECT PAYDIRT:** Caterpillar's multi-million-dollar research and development program—to meet the challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 264

This Little Giant ½-yard crane is equipped with a 40-foot boom, 40-foot pile-driver leads, and a 2,000-pound hammer. Thirty-two-inch pads permit it to work effectively in the Louisiana swamp.

Crane cuts pile-driving costs by 25 per cent

The AAA Foundation Co., Inc., of Metairie, La., a suburb of New Orleans, used its Little Giant Model C-32 for pile driving in a new housing development there.

This ½-yard crane is equipped with a 40-foot boom, 40-foot pile-driver leads, and a 2,000-pound hammer. The machine, one of three Little Giants owned by the contracting firm, has 32-inch pads for working the swampy ground in the area.

The company reportedly has tripled its driving figures to an estimated 300 to 400 per day, thus lowering costs by 25 per cent.

For further information write to Little Giant Crane & Shovel, Inc., Dept. C&E, E. 16th and Howard Drive, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 42.

Bid-letting paper work slashed with computers

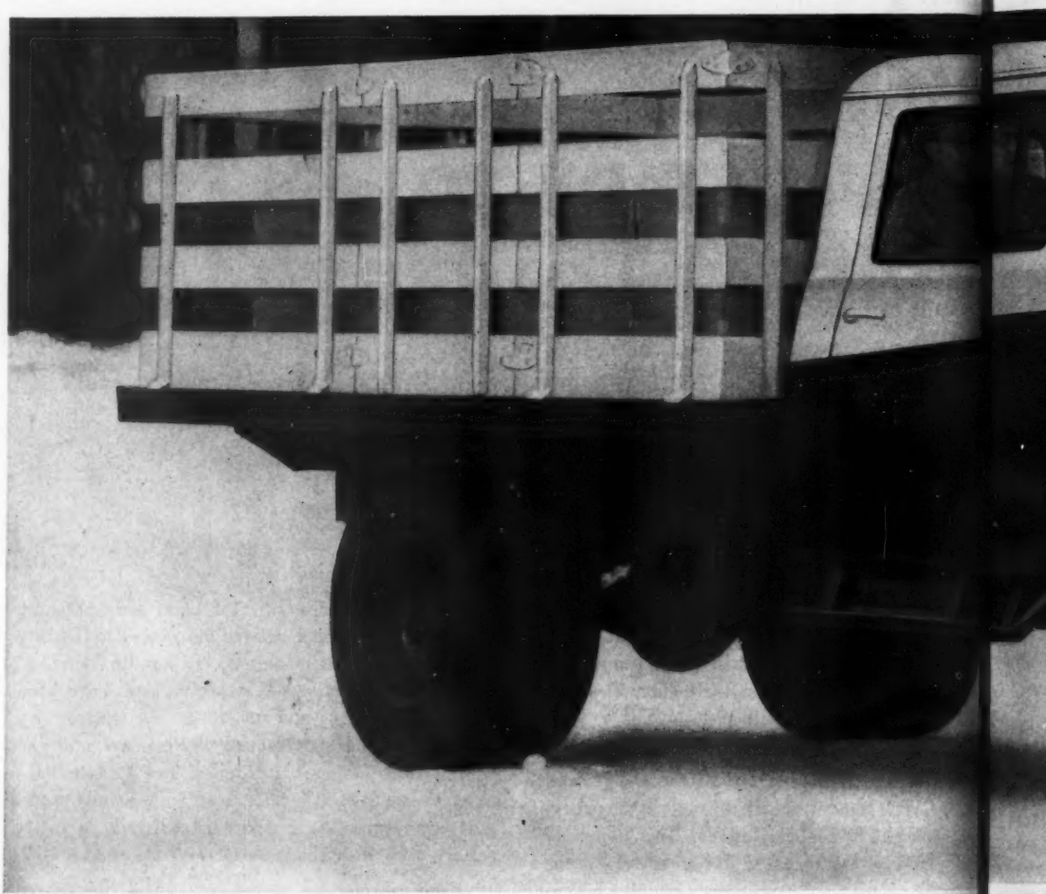
The use of electronic computers has drastically reduced bid-letting paper work for the Michigan State Highway Department.

Highway Commissioner John C. Mackie says the department's new system of electronic checking of contract bids can save as many as 15,000 man-hours a year. It also means that contractors will receive, shortly after each letting, an itemized listing of bids and their standing with competitors for the same work.

The system, inaugurated last summer, involves the use of punch cards and IBM machines.

For further information write to the International Business Machines Corp., Dept. C&E, 590 Madison Ave., New York 22, N. Y., or use the Request Card at page 18. Circle No. 86.

A 2,800-foot trench, approximately 7 feet wide and 12 feet deep, was required for a storm-sewer installation at a new Wichita, Kans., aircraft plant. The Vollmer Construction Co., of Wichita, moved its Schield Bantam Model C-35 crawler dragline in and dug the entire job with this one machine. Digging was tough through the first ten feet of the trench where hard clay and gumbo were encountered, yet the Bantam dug approximately 500 yards per 8-hour day, the company states. For further information write to the **Schield Bantam Co.,** Dept. C&E, Waverly, Iowa, or use the Request Card at page 18. Circle No. 88.



CARRIES A SIX-MAN CREW IN ALL-WEATHER COMFORT

INTERNATIONAL Trucks with Travel-Crew Cabs carry men and materials to the job site in one operation. It's always fair weather inside the cab no matter how foul it is outside.

Versatile INTERNATIONAL Trucks with six-man Travel-Crew Cabs have third door access to rear seat for easy in and out. Both back and front seats are over 5-ft. wide for maximum driver and passenger comfort. Rugged INTERNATIONAL chassis and cab are factory-matched and warranted . . . sold at one low complete unit price. Compact-design and conventional models including 6-wheel models with GVW ratings to 33,000 lbs. See your INTERNATIONAL Truck Dealer, today!

INTERNATIONAL TR

Automatic Welding Co.'s Twin Track-O-Matic speeds rebuilding of crawler tracks.

Hardsurfacing improved with automatic welder

A Union, N. J., equipment distributor recently installed an automatic track welder, manufactured by the Automatic Welding Co., in its maintenance shop to handle the "remanufacturing" or rebuilding of crawler-track components. The firm has found the new welder to be faster, and to produce a better quality of hardsurfacing.

According to Foley Machinery Co. officials, the new-type welding rods developed by Automatic Welding for this machine are in great part responsible for the greater speed and quality of the firm's hardsurfacing work. It now takes the company only 18 to 20 hours to completely build up a set of Caterpillar D8 track rails, and about 16 hours to rebuild a set of D7 rails.

For further information write to the Automatic Welding Co., Dept. C&E, Airport Road, Waukesha, Wis., or use the Request Card at page 18. Circle No. 114.

Air-operated drill saves contractor time, money

The New Jersey Drilling Co., Madison, N. J., has found a new application for its Ingersoll-Rand Trucm-3 Drillmaster. The machine had previously been used only for blast-hole work, one of its primary purposes. Since the firm also contracted to dig

The Ingersoll-Rand Trucm-3 Drillmaster.

water wells, it was decided that the Drillmaster might be used for this work, especially where the wells had to be drilled in hard rock.

At the same site at which, with a churn-type drill, it had taken 240 hours of drilling to sink a 120-foot well, the Trucm-3, using a downhole drill, sank a 160-foot well in 20 working hours, producing 20 feet of 6½-inch hole and 140 feet of 4¾-inch hole. The contractor reports that during a 3-month period, 50 water wells having an average depth of 100 feet were drilled by the I-R unit. Average hole output was estimated to be 100 feet per day.

This Drillmaster was mounted on a highway vehicle built by the Crane Carrier Corp. Air for drilling was supplied by an Ingersoll-Rand 600-cfm Gyro-Flo rotary compressor mounted on the vehicle.

For further information write to the Ingersoll-Rand Co., Dept. C&E, Phillipsburg, N. J., or use the Request Card that is bound in at page 18. Circle No. 92.

Here's the all-purpose four-wheel-drive INTERNATIONAL Travelall. Take it anywhere on any construction job—you'll find a dozen new uses for it every day. The weather-tight Travelall has more loadspace than other wagons. It carries 8 husky construction workers or a full load of tools and equipment fully weather-protected all day. On or off the road the Travelall has plenty of power and traction. Its accurate, positive steering and road-hugging qualities makes all driving easier and safer. See and drive a four-wheel-drive Travelall soon.

INTERNATIONAL HARVESTER COMPANY, CHICAGO
Motor Trucks • Crawler Tractors
Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

TRUCKS cost least to own!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 265

M-F Work Bull 1001 has instant reversing (without shifting), direct line thrust, 43° rollback, plus eight change-in-the-field attachments.

M-F – the FIRST to take the Right Approach to LIGHT INDUSTRIAL EQUIPMENT

Only M-F Work Bulls with Davis-engineered loaders, backhoes, and other attachments fill the bill for light industrial equipment with proven quality and customer acceptance.

They are specially designed for industrial use with many features found only in bigger, more expensive equipment.

The same machine and the same operator can do scores of jobs – trenching, backfilling, loading, clearing, lifting, material handling, or cleaning up – to keep your job rolling and your profits multiplying.

Because M-F rigs depend upon speed, maneuverability, and proper application of power instead of brute force and single-load capacity, they work circles around – and replace – costly, single-purpose machines in many cases.

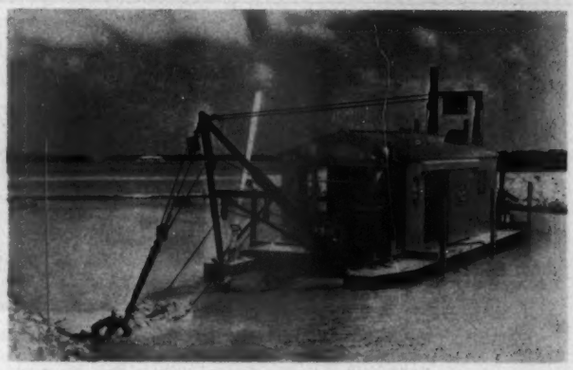
Your Massey-Ferguson Industrial Dealer can help you select just the right power package for your operation – and he'll back it up with service. Write today for free literature and his name and address.

Work Bull 1001 | Work Bull 303 with 500 Loader and Davis Backhoe | Work Bull 302 with Davis Loader and Backhoe | Work Bull Fork Lift

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 266



Taking sand from the ocean floor, this Ellicott portable 10-inch hydraulic pipeline dredge is employed in making a beach for an island development north of Marathon Shores in the Florida Keys. According to Florida builder F. P. Sadowski, the dredge pumps 150 to 200 cubic yards per hour through a 1,000-foot pipeline. More than 3 million cubic yards of material has already been relocated. It is reported that dredging, originally planned for five years, will be completed in three. For further information write to **Ellicott Machine Corp.,** Dept. C&E, 1611 Bush St., Baltimore, Md., or use the Request Card at page 18. Circle No. 58.

Two-way radio speeds large sewer project

Installation of some 45 linear miles of sanitary sewers in Millcreek Township, near Erie, Pa., reportedly is being aided considerably by the use of Motorola 2-way radio.

Subcontractor George Tripp, Inc., of Pontiac, Mich., operates two big backhoes and several high lifts, along with a fuel truck, pickup trucks, and heavy dump trucks on the fast-moving project.

Movement of equipment is so efficient now, he reports, that as much as four or five hours can be saved in dispatching a unit like the backhoe and directing the job it must do at a new location. Gasoline and maintenance savings are routine now, too, he says.

For further information write to Motorola, Inc., Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 82.

Core-drilling equipment saves state 15 per cent

In a project involving drilling for test cores 4 inches in diameter by 7 inches deep from 72-inch-diameter reinforced-concrete sewer pipe, the State of Illinois Highway Department Testing Laboratory experimented with a drill-stand-mounted Truco heavy-duty 500-rpm hand drill motor with integral Truco water swivel and 4¼-inch-OD diamond drill bit.

In use, the drill-stand and drill-motor combination is set up within the 72-inch sewer pipes, and anchored in position by means of a piece of 4×4 braced from the telescoping center post of the drill-stand column to the ceiling of the pipe.

The setup time was only 2 minutes per core, and actual drilling time was 4 to 6 minutes per core. Cost per core reportedly was reduced to approximately 15 per cent of previous methods used.

For further information write to the Truco Masonry Drilling Division, Wheel Trueing Tool Co., Dept. C&E, 3200–53 W. Davison Ave., Detroit 38, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 57.

For more facts, circle No. 267→

Build your own ¾ yard Lorain-26 at the price you want to pay

Now you can buy a ¾ yard Lorain-26 with everything you want in it but no more than you need. You select the "package" you want—whether dragline, clamshell, shovel, crane or hoe, and you'll get the properly balanced machine to do your job best.

You buy only what will pay off for you . . . without unneeded extras that can boost initial cost and don't necessarily make any more money for you.

And you'll be amazed at the lower prices your Lorain distributor can quote you. Check and compare what he has to offer you on this ¾ yard workhorse. You'll find you'll get more —and pay less. See him today.

LOW COST DIGGING PACKAGE
A heavy duty shovel-hoe without excess weight on a digging crawler. Shovel boom is all-welded, with cable crowd, power dipper trip. Welded gooseneck tapered hoe boom. Power plant, clutch and hoist shafts contribute to counterweight effect. **And the price is right.**

DRAGLINE AND CLAMSHELL PACKAGE
Hoist drums have anti-friction bearings for faster casting. Long life swing clutches speed action. Revolving fairlead has anti-friction bearings. Special gearing for more efficient dragline work. Special dragline boom available for greater operating ranges. **And the price is right.**

18-TON CRANE PACKAGE
Lorain's exclusive Square-Tubular-Chord Boom is lighter, stronger, permits greater payloads. Big crawler, simultaneous hoist, swing and travel available. Hydra-Ease crawler controls. All control linkage mounted on anti-friction bearings. **And the price is right.**

LORAIN®

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Ask your nearby Lorain distributor for the full story—and about his on-the-spot parts and service facilities that add so much when you buy a Lorain.

The Model 280's production in spreading truck-dumped material into the roadbed averaged 360 truckloads or 5,000 yards per day. Several times a day, the machine sped 2½ miles to the rock pile to do cleanup work around a big power shovel.

Dozer does double duty, saves $12 per hour

Handling two jobs 2½ miles apart—dozing rock fill and cleaning up around a big power shovel—a Michigan Model 280 rubber-tire dozer saved the Alley Construction Co., of Faribault, Minn., $12 per hour on a highway relocation job near Rochester, Minn.

The firm contracted to relocate 8.94 miles of 4-lane U. S. 14 from its junction with U. S. 52 northwest to Byron. The contract called for moving 1,091,000 cubic yards of dirt, plus 447,000 yards of rock.

The 262-hp Michigan spread truck-dumped material forward into the roadbed, with a production average of 360 truckloads or 5,000 pay yards per day.

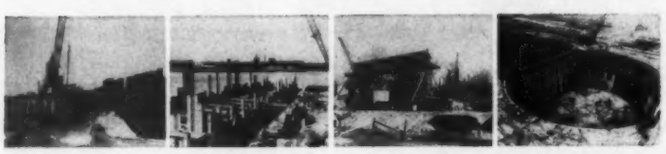
Then, six to eight times a day, the machine interrupted this short-distance shuttle-type dozing and traversed the 2½ miles to the rock pile (at speeds up to 28 mph) to clean up around the shovel. Here, it quickly did the necessary dozing, then sped back to the fill. With the usual full-time cleanup tractor thus eliminated, Alley saved the $12-per-hour operating cost.

For further information on the Michigan Model 280, write to the Clark Equipment Co., Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 28.

"We Called L. B. FOSTER CO.

WE GOT THE PILING"

For temporary Steel-Sheet Piling requirements—
more and more contractors use The Foster Piling Rental Plan
to save costs, save capital, assure "on-schedule" work
with the exact lengths and sections needed

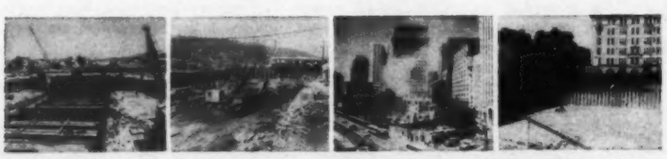


Hyperion Sludge Outfall Pipe Line, Los Angeles
Healy-Submarine-DeLong

Conn. Turnpike Bridge
Quinnipiac River, New Haven
Moore-Lopier Construction Co.

Costa Rica Bridge
Caribbean-Macomber-
Brunzell Construction Co.

Public Service Co., Indiana, Inc.
New Albany Power Station
Gust K. Newberg Constr. Co.



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Refer to our Piling Service Catalog in
Sweet's Construction File or write for Catalog CE-1

L. B. FOSTER CO.
PITTSBURGH • NEW YORK • ATLANTA • CHICAGO • HOUSTON • LOS ANGELES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 268

Compactor's versatility aids in county road work

The Seaman-Gunnison Duo-Pactor, offering a steel-roll and a pneumatic-wheel compactor combined in one machine, proved profitable for Blackhawk County, Iowa, reports county engineer Clarence Baldwin.

During the past season, the Duo-Pactor helped with seal-coating of 4 miles of road; covered an 8-mile stretch with a rolled-stone base; and salt-stabilized an additional 12 miles.

According to Baldwin, on new base for seal-coat work the unit rubber-rolls a 5-inch compacted thickness. The steel roll works the surface smooth, level, and hard as concrete on the last pass. Then the crew shoots the surface with one quart of cutback per square yard. Chips are spread and pressed in by the steel roll in one pass. As soon as the first coat cures, a second coat is applied. Rubber rolls finish the job in four passes.

On the salt-stabilization work, up to 1,000 tons of crushed stone and 6 to 8 tons of salt per mile are used, and rubber rolls handle most of the compacting. The steel roll catches everything the tires missed on the final pass.

For further information write to the Seaman-Gunnison Corp., Dept. C&E, 2763 S. 27th St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 103.

Concrete additive speeds paving of jet aprons

A contracting combine engaged in a rush jet-runway paving job at Chicago's O'Hare Field not only finished the job a month ahead of schedule, but in the process came up with a unique method for using a water-reducing admixture to place several strips of concrete next to each other in the shortest time possible.

The combine, CK Associates of Evanston, Ill., faced its toughest problem in the four broad "hold" aprons at the ends of two taxiways. These areas were to be 13 strips wide. Paving alternate strips would have

been difficult with available equipment; on the other hand, each strip had to cure long enough to support heavy finishing machines while the adjoining strip was being paved.

By using Dewey & Almy's WRDA, a water-reducing agent, the combine reports it was able to roll its equipment on the green concrete in considerably less time than would have been required without the use of the additive. The method used was to place strips in two of the aprons on one day, and in two more on the next, returning the third day to place strips adjoining those put down the first day.

For further information write to the Dewey & Almy Chemical Division, W. R. Grace & Co., Dept. C&E, 62 Whittemore Ave., Cambridge 40, Mass., or use the Request Card at page 18. Circle No. 109.

Printer saves time, costs for consulting engineers

A Connecticut firm of consulting engineers reports considerable time saved by having a diazo whiteprinter right in the office next to their draftsmen's drawing boards.

The firm—Arthur G. Beaulieu Associates of Hamden, Conn.—acquired its Blu-Ray printer, a new budget-priced diazo machine, last year. "With time our most valuable product, the Blu-Ray has already paid for itself", says Arthur Beaulieu. "Anyone in our office can make a quick

Austin Schofield, draftsman in Beaulieu's office, runs a tracing through the Blu-Ray whiteprinter.

print in less than a minute, instead of having to wait hours while it goes out to a commercial printer."

The new printer makes blue (or black) line prints of anything drawn, typed, written, or printed on any kind of translucent material, such as tracing paper. The Beaulieu firm, which specializes in engineering service to architects of commercial and institutional buildings, uses the diazo whiteprinter for making rush copies of structural, mechanical, and electrical drawings.

"The big advantage of the machine to us", states Beaulieu, "is that it's right here whenever we need it—which is practically every hour of the day. This is a big help on weekends, when commercial shops are closed and we suddenly need a print."

For further information write to Blu-Ray, Dept. C&E, 407 Main St., Ivoryton, Conn., or use the Request Card at page 18. Circle No. 108.

Working at the site of a new shopping center, this Case Model 1000 tractor shovel, owned by M. W. Kesler, excavating contractor of Arlington Heights, Ill., loads fill at the rate of 250 cubic yards per hour. Using counter-rotation to make fast spin-turns—with one track driving forward and the other in reverse—the 2-cubic-yard shovel completes a pass in less than 30 seconds. Dirt is hauled seven blocks by truck and used as fill for a housing project. According to the company, 6 to 7-yard trucks are loaded in 1½ minutes, 11-yard units in 2½ minutes. For further information write to the **J. I. Case Co.**, Dept. C&E, 700 State St., Racine, Wis., or use the Request Card at page 18. Circle No. 78.

"THE BEST WE EVER HAD"

says **Francis Smalley, President**
D. R. Smalley & Sons, Inc.

"It's by far the fastest of its kind and that's just what we wanted. The best we ever had!" This is Francis Smalley's comment on the new CRAWL-IR shown above. It proved its performance on the rock work for relocation of highway U.S. 40 on the outskirts of Dayton, Ohio, under contract to D. R. Smalley & Sons, Inc., of Celina, Ohio.

The CRAWL-IR, with fully hydraulic controls, was used with I-R Carset bits and powered by a 600-cfm GYRO-FLO portable compressor—a team which easily broke all previous performance records for this type of work.

The Ingersoll-Rand CRAWL-IR is a *completely mechanized*, self-propelled knee-action crawler drill at its rugged best. Five large, double-acting hydraulic cylinders move the feed tower to *any position* at the touch of a throttle. Reverse rotation of the powerful D-45 drill permits adding and removing coupled steels in a hurry. And the powerful, air-motor-driven crawlers permit the unit to tow its own compressor, even over rough terrain.

Time formerly spent in moving, setting up and steel handling is now turned into *drilling time*. With drill positioning fully mechanized, one-man operation is entirely feasible.

Ask your I-R man for complete information on the time-saving, money-saving features of the new CRAWL-IR.

Ingersoll-Rand
14-793
11 Broadway, New York 4, N.Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

For more facts, use Reader-Reply Card opposite page 18 and circle No. 269

Truck mixers are also charged under the batching hopper, and a 1-yard traveling hopper is trolley-operated between the batching hopper and a Besser Vibra-Pack block machine. With its Blaw-Knox system, the firm averages 30 yards of ready-mix concrete and 40 yards of concrete for blocks, per day.

Batch plant pays for self in less than 19 months

A 6-unit Blaw-Knox batch plant owned by the Builders' Supply Co., of Montgomery, Ala., reportedly paid for itself in less than 19 months, simply through elimination of small-quantity cement purchases and the resultant unloading charges.

The firm uses 600 barrels of cement per week. Bulk purchasing reduced this cost figure 41 cents per barrel, saving $246 per week or $20,172 per 19 months. Unloading cement costs 10 cents per barrel, saving $60 per week or $4,920 per 19 months. The total savings amount to $25,092.

In addition, two men formerly were employed—one to handle aggregate unloading and another for cement unloading. Now, one man does both jobs.

The plant consists of a Model P-5150 GAC bin; Model C-152 and Model C-123 circular aggregate bins; and a Model 600 Lo Cement Bin.

The GAC bin is divided into four 28-ton-capacity compartments—two for sand and two for aggregate; and one cement compartment, rated at 220 to 225 barrels. The Model C-123 has a capacity of 50 tons, while the other round storage bin will hold 130 tons.

A 21-foot-long, 75-ton-per-hour screw unloader and a 46-foot-long special link-belt screw unloader, both Blaw-Knox undertrack conveyors, unload cement and aggregate into a B-K bucket-type elevator. According to the company, this installation makes it possible to unload a car in 3½ hours.

In an average day, the firm batches 30 yards of ready-mix concrete and 40 yards of concrete for blocks.

For further information write to the Blaw-Knox Co., Dept. C&E, P. O. Box 1198, Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 27.

Transit saves time, money on tough tunnel project

To handle the extraordinary number of deflections, angles, and curves involving a great deal of close-tolerance measuring in the $13½ million tunnel section of Boston's J. F. Fitzgerald Expressway, the V. Barletta Co., of Roslindale, Mass., contractors

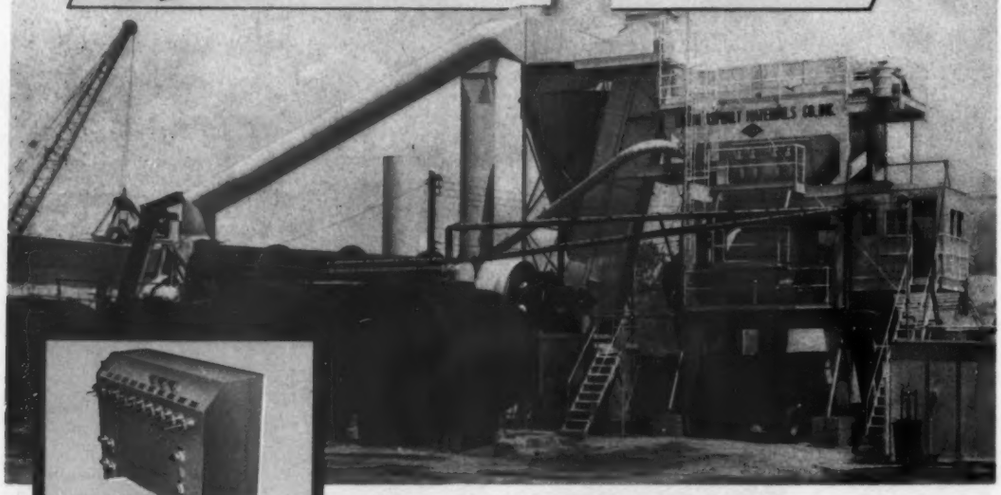
for the project, chose the Berger 6¼-inch bronze transit to do the job. It solved intricate problems in laying out, alignment, elevation, and leveling. Barletta reported that the optics were so clear it was no problem to pick up targets at 1,200 feet.

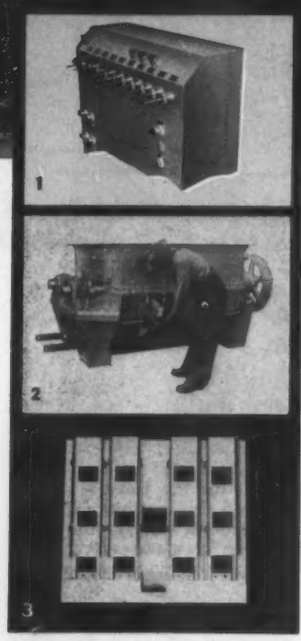
Because tolerances were held to the rigid specifications without difficulty; because steel fitted where it was supposed to fit; and because the Berger transit required no maintenance throughout the entire construction period, Barletta estimates that its savings were considerable.

For further information write to C. L. Berger & Sons, Inc., Dept. C&E, 37 Williams St., Boston, Mass., or use the Request Card at page 18. Circle No. 47.

UNION ASPHALT MATERIALS CO. Inc., Ostrander, Ohio

SELECTS THE BIG MADSEN MODEL 481 6000-lb. ASPHALT PLANT





...for FAST PRODUCTION

...for EASY, LOW-COST MAINTENANCE

What do you look for in an asphalt plant? Union Asphalt Materials Co., Inc., Ostrander, Ohio wanted the clean operation, oversize construction, maintenance economy, and the fast production and big tonnage output of the MADSEN Model 481. The MADSEN 6000-lb. plant shown above gives this successful contractor these MADSEN advantages...advantages that can pay-off in greater owner profits for years to come. Three of the outstanding MADSEN features which help provide these advantages are shown at the left.

1. **Fast air-cylinder operation** – through conveniently located control console. Levers electrically energize solenoid-operated air valves for faster control of bin gates, weigh-box, mixing, asphalt injection, asphalt charging and dumping to truck.
2. **Oversize MADSEN Twin-Shaft Pug Mill Mixer** – for the ultimate in fast, thorough mixing. Curved bottom and center liners are externally removed and installed ...an easy 20-minute job per liner section for one man *without getting on the inside of mixer.*
3. **Triple discharge bin gates** – for livelier, more efficient bin action. Aggregates are withdrawn from each bin compartment through 3 openings. This MADSEN feature (patent pending) eliminates "coring out" and segregation – results in more uniform filling of the weigh-box.

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN Works P.O. Box 38, La Mirada, California or Baldwin-Lima-Hamilton Corp., Lima, Ohio

MADSEN Equipment that Serves

COMPLETE PARTS STOCK AVAILABLE IN LOS ANGELES AND LIMA, OHIO

THE MADSEN LINE OF PRODUCTS FOR THE ASPHALT PAVING INDUSTRY

ASPHALT PAVING PLANTS • POG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS
ROAD POG TRAVEL-MIX PLANTS • WEIGH BATCHERS • SUPER FLOAT AND JOHNSON FLOAT FINISHERS
ASPHALT TANKS • ROYAL CROWN PUMP VALVES • ASPHALT AND FUEL PUMP UNITS

MADSEN WORKS
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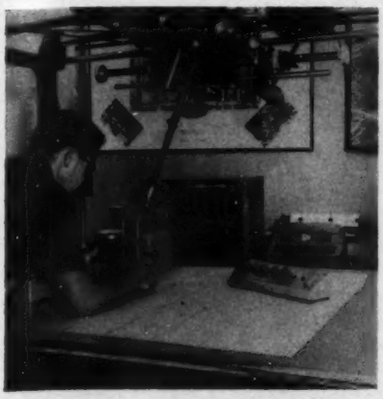
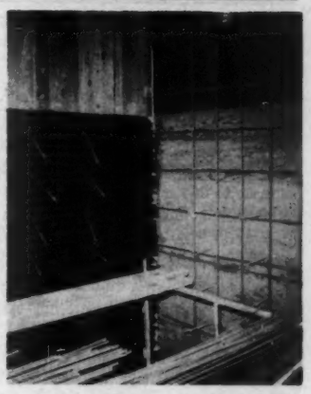
For more facts, use Reader-Reply Card opposite page 18 and cricle No. 270



In operation, a 2-dimensional map of a stereo model is drawn with a tracing table. The map is scaled and oriented to the stereo model, and a dot of light on the plotting table is made to follow the desired section on the surface of the stereo model.



In forming the 14-foot-high foundation walls of this job, the contractor was not allowed to trespass on the adjoining property in any way, so all forming had to be done from the inside. Clearance between the foundation wall and the property line was 1 inch. In addition, exterior below-grade dampproofing was specified by the architect. The contractor selected the Gates Vertical Rod System for the job. Asphalt-coated corrugated metal sheets were used for the outside form panels and allowed to float. Conventional Gates methods were used for the inside of the wall. With the architect's approval, the sheets and 14-foot steel rods were left in place after the concrete was poured. For further information write to **Gates & Sons, Inc.**, Dept. C&E, 80 S. Galapago St., Denver 23, Colo., or use the Request Card at page 18. Circle No. 98.

Terrain data translator saves aerial mappers time

To save costly man-hours required for engineers to convert into computer form the field data from aerial and mapping surveying, Pafford & Associates, Los Angeles surveyors and mappers, put into use an electronic terrain data translator made by the Benson-Lehner Corp.

The machine, called TDT, automatically translates terrain measurements from an aerial stereophotograph to digital data, ready for direct input to the computer. Since the new procedure is virtually all-automatic, engineers can be released for other work. In addition, with the elimination of complicated field surveying and in-office transcribing, two major areas of human error have been removed. The result, according to Pafford & Associates, is a new high in accuracy and reliability.

For further information write to the Benson-Lehner Corp., Dept. C&E, 11930 W. Olympic, Los Angeles, Calif., or use the Request Card at page 18. Circle No. 34.

High-tenacity grease cuts maintenance costs

A lubricant designed to protect open gears from premature wear and damage is enabling an East Coast slag reclaimer to cut maintenance man-hours and grease consumption 66 per cent in the lubrication of open gears on excavating shovels.

With conventional greases, the lubrication of these gears had always been a problem for the company. Heavy throw-off resulted in high consumption of grease; this, in turn, caused excessive maintenance hours. Open gears had to be lubricated three times a week. After trying Keystone No. 29 lubricant, the company discovered that one greasing a week was sufficient to do the job.

For further information write to the Keystone Lubricating Co., Dept. C&E, 21st and Lippincott Sts., Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 110.

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THE JLO* SERIES

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*Reg. TM of Jlo-Werke, G.m.b.H., Pinneberg, Germany

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- **SIMPLICITY:** Jlo Series diesel engines are of 2-cycle design: eliminate valves, tappets, push-rods and camshaft for dependable, maintenance-free operation in their horsepower range.
- **LIGHTWEIGHT:** 2-cycle simplicity and judicious use of aluminum in construction reduce the weight of Jlo Series diesel engines to less than 15 pounds per horsepower!
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Company_____

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 271

Portable asphalt heater reduces operating costs

Reporting on the performance of its Chattanooga materials heater, the Unaka Paving Co., Inc., of Johnson City, Tenn., states that the unit heats asphalt to 350 degrees F in only one hour from a cold start, and in 30 minutes after an overnight shutdown. The heater is designed to replace a boiler or oil heater, material tanks, oil tanks, water tanks, piping, and pumps.

According to plant superintendent Loyd Cummins, the Chattanooga's portability and exceptionally low fuel consumption have substantially reduced the company's operating costs. Also, the temperature of the hot gases in the return flues is not high enough to cause coking.

The heater is available in both oil and steam models.

For further information write to the Industrial Boiler Co., Inc., Dept. C&E, P. O. Box 9133, Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 124.

The portability and low fuel consumption of the Unaka Paving Co.'s Chattanooga materials heater has resulted in a substantial saving in the firm's operating costs. Available in both oil and steam models, the unit reportedly heats asphalt to 350 degrees F in an hour from a cold start.

Iron-powder electrodes speed field welding

The use of iron-powder-type electrodes substantially speeded the welding of the 308-foot-square steel-grid structure for the roof of the dining hall at the new Air Force Academy in Colorado Springs. The grid structure, made up of trusses, was assembled

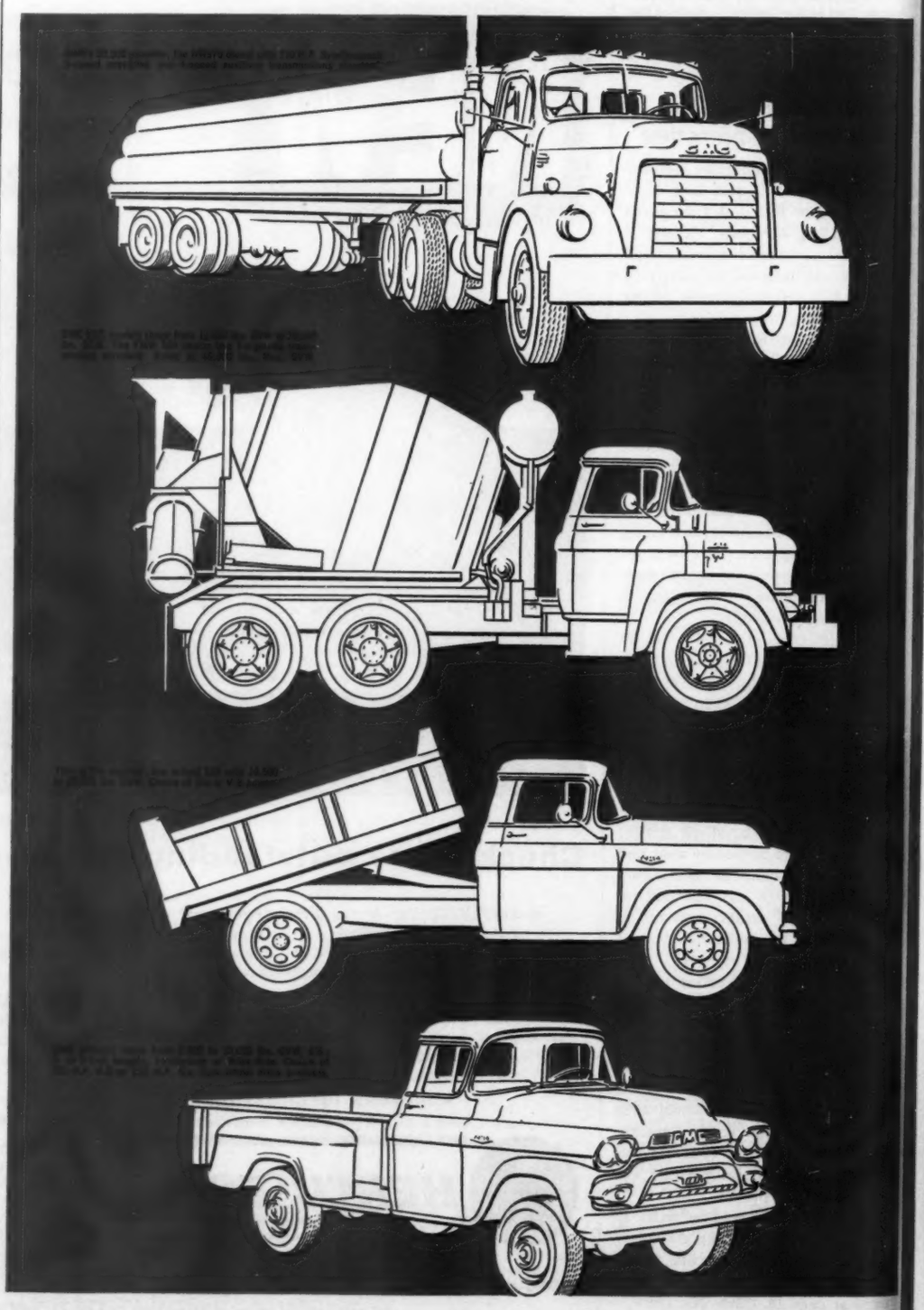
The largest number of welds were butt joints in the flanges of the chords where the trusses intersected the long main members. Coped webs permitted welding from the back side.

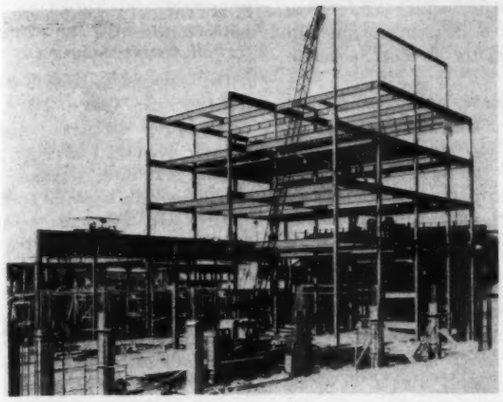
and welded on the ground and then jacked into position.

Twenty-seven welders deposited over 14,500 pounds of welding electrode in butt and fillet welds. About 5,000 pounds of this was Lincoln Electric's E-6010 electrode, Fleetweld 5, and the remaining two-thirds was Lincoln iron-powder E-6027 electrode for butt welds, Jetweld 2.

According to the company, the time saved by using Lincoln iron-powder electrodes permitted completion of the welding well ahead of schedule.

For further information write to the Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 39.





A NEW BUILDING goes up in Denver, Colo. More than 2,000 tons of structural steel is being used for the $6,800,000 U. S. Post Office annex, scheduled to be finished early in 1960. C. H. Leavell & Co., El Paso, Texas, is handling the job.

Unique standby system on New Jersey Turnpike

The New Jersey Turnpike Authority has developed a unique standby system for providing emergency equipment for accidents. The system has been credited as a basic factor in keeping the turnpike's fatality rate among the lowest in the nation.

Currently there are 36 first-aid squads and 22 fire departments included in the standby system. These units divide the 131-mile turnpike into overlapping areas of responsibility of about 8 miles each. For this service, the authority makes a substantial contribution every six months to each participating unit. In addition, each first-aid squad receives $25 for each call, and the fire departments $50 for each piece of apparatus that is used on a call.

There is a standby first-aid squad within three minutes from all points of entry to the turnpike. Where interchanges are far apart, the authority has provided emergency gates connecting with local roads.

The first-aid squads on the turnpike have an average membership of 24 men, and some exceed 50 members.

In addition to the 36 standby units, the authority has engaged an equivalent nucleus of units auxiliary to the standby squads. These auxiliary units serve in the event the regular units are on another call, or when additional units are required.

Airco builds new unit for Armco Steel works

The Air Reduction Sales Co., manufacturer of industrial gases, welding and flame cutting equipment, and a division of Air Reduction Co., Inc., New York City, is building a new plant on company property at Butler, Pa., for Armco Steel Corp. The plant will supply the Butler works of Armco with pipeline oxygen. The new plant, which will consist of an air-separation unit with a production capacity of 120 tons per day of high-purity oxygen, is scheduled to open in about 18 months.

B & D opens warehouse in Capetown, S. A.

The Black & Decker Mfg. Co., Towson, Md., maker of electric tools, has opened a sales warehouse in Capetown, South Africa. The new facility is expected to expedite shipment of the company's products throughout the Union of South Africa, South West Africa, the Federation of Rhodesia, and Nyasaland. William Hare has been appointed sales director of Black & Decker South Africa (Pty.) Ltd.

Food Machinery news

Construction work is under way on an addition for the Lakeland office of the Florida Division of Food Machinery & Chemical Corp., manufacturer of Form-Crete steel forms. The modern building, of steel, concrete block, and prestressed concrete, will have an area of 8,500 square feet. Completion is expected early this year.

Thor names engineer

James A. Perham, chief product engineer of the Thor Power Tool Co.'s Aurora, Ill., works, has been named chief engineer of the firm's Speed-Way Mfg. Co., division at LaGrange Park, Ill. He will aid in expanding the company's line of portable electric power tools.

Net revenues of Florida's Sunshine State Parkway showed a gain in November of 14 per cent over the same month a year ago. Total revenues amounted to $256,475.74

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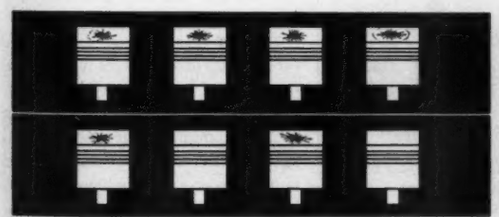
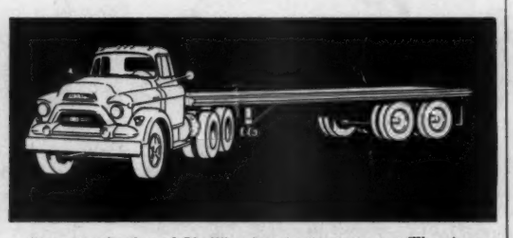
The most dynamic engineering, design and quality-control program the industry has ever known is bringing you the greatest money-saving, money-making advances in trucks today.

A new heavy-duty diesel engine with record-breaking economy and long, reliable life! New M-400 bearings with *seven times* the life of others! These are just a few of the things GMC Operation "High Gear" is bringing you. That's why there was never a better time than right now to see your GMC dealer.

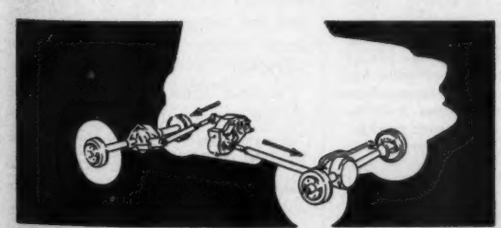
GMC Truck & Coach—a General Motors Division.



Higher efficiency yet lighter weight! With GMC 2-cycle diesel (at top) *every* down stroke is a power stroke. 4-cycle diesel (at bottom) used by all other leading manufacturers only gives a power stroke *every other* down stroke. GMC engine delivers more horsepower per cubic inch and actually weighs less!



Biggest selection of Six-Wheelers in the industry! There's a model for every job. You choose from the widest combination of components ever offered — engines, axles, tandems, wheelbases, GVW's and GCW's—any combination that does the job at lowest cost!



Positive traction on any terrain! A GMC with 4-wheel drive goes up even 60% grades with a full load. Driving on all four wheels doubles traction . . . jobs never get bogged down.

From ½-ton to 45-ton . . . General Motors leads the way!

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TRUCKS

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Labor review

Seattle carpenters first to settle in northwest negotiations

A 3-year agreement between the Associated General Contractors and the Seattle-area carpenters was the first settlement reported from the northwest, as negotiators in Washington, Oregon, and Idaho attempted to come to terms before the December 31 expiration date of several building-trades agreements.

Under the new Seattle agreement, the present $3.13 hourly rate for carpenters will go up 19 cents this year, 16 cents in 1960, and 15 cents in 1961. Fringe payments are unchanged. The employers' health-welfare contribution is 10 cents hourly. Travel payments for building construction range from $1.50 a day for between 16 and 27 miles to $4 a day for 35 miles or more. Travel pay for heavy construction ranges from $1 a day for less than 25 miles to $4.50 a day for 35 miles or more.

"Voluntary" 2-step raise is given to roofers by Frisco contractors

Members of Roofers Local 40, working under a 5-year agreement with the Roofing Contractors of the Bay Area Counties, Inc., collected a 15-cent wage increase in November, and are promised 15 cents more this year to compensate them for higher living costs and to bring them into line with scales negotiated by other unions in the area.

As explained by union sources, Local 40's contract runs until July 31, 1960, and no wage reopening was called for at this time. The employers, however, agreed to the increased scale "in the interest of realistic adjustment to current price and wage patterns", according to the union. This is said to be the second "voluntary" increase since the agreement was negotiated in 1956.

The November raise brought the journeyman scale to $3.50 an hour. The second 15 cents comes due on August 1, 1959.

Local 40 has jurisdiction in San Francisco and San Mateo counties.

First contract signed with Florida AGC by Polk County laborers

The Associated General Contractors' Florida West Coast Chapter nailed down laborers' wages and working conditions in Polk County for the next three years in its first agreement with Laborers Local 1240.

Heretofore, individual contractors have held contracts with the union, but according to an AGC spokesman, the new pact is "the first bona fide negotiated agreement" in the county. Wage increases totaling 27½ cents hourly are guaranteed by the agreement. The rate went from $1.50 hourly to $1.57½ on January 1, and will rise to $1.62½, on July 1; to $1.70, January 1, 1960; and to $1.77½, January 1, 1961. Expiration date is December 31, 1961.

Under the new agreement, rates for Polk County Laborers move ahead of the scale negotiated by the pace-setting Tampa Laborers in a 3-year agreement expiring March 31, 1960. The Tampa rate, now $1.47½, goes to $1.57½ next April for the remainder of the agreement. The Polk County Laborers also negotiated favorable terms for foremen, compared with the Tampa agreement, in provisions setting a 50-cent differential (Tampa has no set scale for foremen) and requiring a foreman for every six men working as a gang (the Tampa agreement requires a foreman for a gang of ten).

The Polk County agreement provides a 15-cent hourly differential for air-tool operators, mason tenders, mortar mixers, and plasterers' helpers. A 10-cent hourly premium is guaranteed for handling freshly creosoted lumber or hot mastic materials.

Sheet Metal Workers officials accused of taking payoffs

Arthur H. Cronin, head of the Chicago Sheet Metal Workers and a vice president of the international union, denied accepting payoffs from contractors and manufacturers in return for guaranteeing labor peace on their jobs.

The charges against Cronin and other union officials were made on the first day of a brief series of public hearings before the Senate labor rackets committee on alleged collusion between the Sheet Metal Union and Chicago-area employers. Chairman McClellan (D., Ark.), in an opening statement, said that the committee is concerned with "one of the most insidious of union practices" which "occurs when a closely knit union group exacts tribute from employers for the privilege of operating, and from workers for the privilege of working".

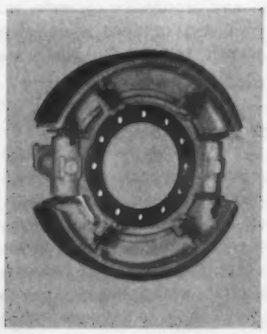
Another angle to the investigation is the "destructive practice" which "occurs when unions or managements, or both, acting in collusion, set out to regulate prices or to prearrange the order and the amounts of bids which are supposed to be competitive and secret on various types of building projects".

Cronin was accused by Carl L. Bur-

coming soon...

for heavy-duty off-highway equipment

the new stopmaster brake



After years of research and development, Rockwell-Standard will soon offer the new Stopmaster Brake. Especially designed for heavy-duty off-highway vehicles, it represents the most advanced brake design to be made available in three decades.

The Stopmaster has been proven by months of rugged, demanding field trials . . . and by long hours of testing by trained technicians using the extensive laboratory facilities of the Rockwell-Standard Brake Division.

The many outstanding features of the Stopmaster brake make this design the answer to the industry's long-standing need for an improved, higher performance, more dependable brake.

Here are only some of the advantages the new Stopmaster brake will offer you!

Faster Stops—For better control. **Cooler Operating**—For extended brake life and durability. **Less Brake Fade**—For safer . . . continuous operation. **Longer Drum Life**—For more dependability—lower maintenance costs. **Greater Interchangeability**—Maximum number of common components for smaller parts inventory. **Longer Liner Life**—For lower operating costs—less maintenance. **Lighter Weight**—For greater production economy.

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Another product of... ROCKWELL STANDARD

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BRAKE DIVISION Ashtabula, Ohio

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rows of the Coleman Co., heating and air-conditioning manufacturers, of taking $27,000 as a payoff to get Coleman equipment installed without "union trouble". Burrows' charge was backed up by testimony from Chicago contractors that they had to pay Cronin or business agents of his Local 73 for the privilege of doing business.

In answer to a question, Burrows said he "assumed" the company would have to continue paying $10,000 a year indefinitely. He was willing to do so, he said, because "we were having no problems", and he had an operating budget of $2¼ million, "so $10,000 was relatively small". In each case, Burrows had requisitioned the checks from the Coleman Co., cashed them, and turned over the money for the alleged payments.

Cronin said that except for $5,000 given him by Burrows in a Chicago cocktail lounge in December, 1954, which he returned, he received nothing.

Cronin's testimony was so different from Burrows' that the committee had the latter return and detail the method of the different payments. Cronin said all this was false except for the payment in the cocktail lounge. He said he didn't know what was in the envelope on that occasion and didn't open it. But he didn't think it was "strange", as suggested by Counsel Robert F. Kennedy. In fact, Cronin said, "I never gave it a thought".

It did enter his mind that maybe it was a bribe, but he decided it was a Christmas present. He returned it four days later because "I didn't like it" and "didn't want it". He bought a cashier's check and sent it back by registered mail.

Cronin declared he didn't know anything "then or now" about Internal Revenue agents having witnessed the passing of the envelope in the cocktail lounge. He "couldn't remember" whether he had heard that before.

Burrows also said he didn't know about income-tax agents being present until later, but thought that was a "plausible reason" for return of the $5,000.

Chairman McClellan declared that one witness or the other had committed "deliberate perjury", that the "irreconcilable conflict" in the testimony could not be due to "honest differences of opinion, lack of recollection, or even faulty memory". He said the transcript would be sent to the Justice Department promptly with the urging that the matter be pursued quickly.

Collective bargaining ordered by NLRB for Detroit Carpenters

A 3-man panel of the National Labor Relations Board ordered the Carpenters District Council of Detroit, Wayne, and Oakland counties and vicinity, to cease refusing to bargain collectively with the Associated General Contractors of America, Detroit Chapter, Inc., the Builders Association of Metropolitan Detroit, and the Carpenter Contractors' Association of Detroit.

The NLRB order came on the basis of a settlement stipulation entered into by the disputants wherein the Carpenters agree to continue bargaining, as in years past, with all three building associations together, and to desist from striking against one or all of the associations without first complying with the Taft Act's stipulation that federal and state mediators be given the required notice.

The dispute arose in May, 1958, during contract negotiations, when Carpenters struck the Builders Association of Metropolitan Detroit, one of the three associations which traditionally bargain jointly with the Carpenters. The associations then brought unfair-labor charges against the union. Both the strike and the negotiations were terminated before the board heard the case.

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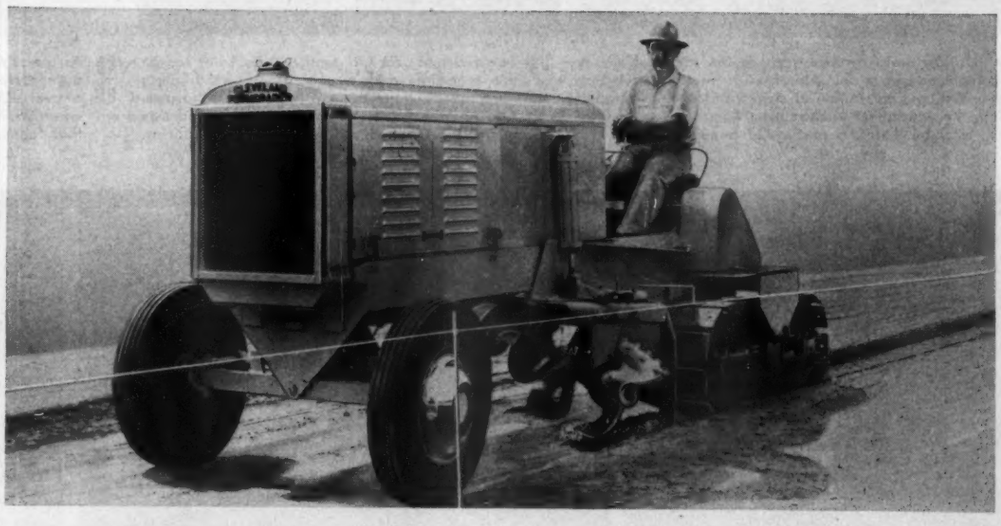
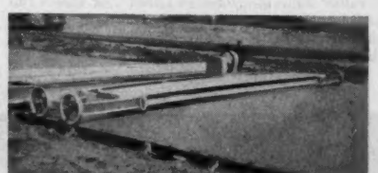


Equipped with power steering, hydraulically operated cutter lift bar, and improved self-starter, the Cleveland Formgrader eliminates undercutting beneath the forms . . . thus preserves the load-carrying bearing capacity of the compacted earth.

Pin Puller removes 1500 form pins hourly

Heavy-Duty Mesh Bridge saves manpower



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Unusual paving train hits high production

by RALPH MONSON, field editor

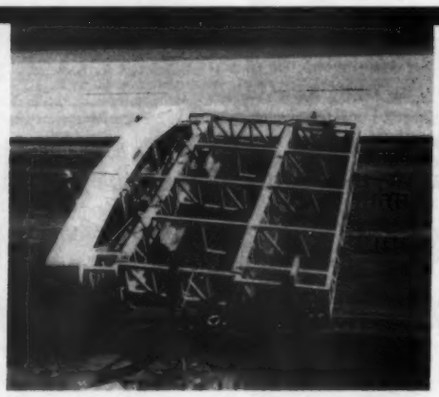
(Additional photo on front cover)

Placing of 2,150 linear feet of 24-foot-wide 8-inch concrete pavement and a 4-inch cement-treated subgrade on U. S. 40 in California's Sierra Nevada mountains was a usual day's work for Gordon H. Ball, Inc., Danville, Calif.

On the best day, crews hit 2,830 linear feet. High production was made with a variety of conventional and specially adapted machines on the interstate route through the Truckee River Canyon, in spite of the heavy curvature and corresponding super-elevations.

Paving was done under a subcon-

1 A Cat No. 12 motor grader spreads the material slowly across the roadway in advance of a Cat tractor, assisted by another Cat, pulling a Ko-Cal twin windrower. Designed by Ball, the windrower was built by Koehring Co. of California, Stockton. Later, a special D8 pulled the rig.



2 Two rows of scarifier teeth at the front loosen the material, and two pairs of windrowing moldboards shape the two calibrated windrows. Two paddle-type scrapers cut tops of windrows to grade. A belt deposits excess outside forms.

3 As the windrower moves along, a V-shaped drag le... a depression in the windrows for cement. The amou... cement added is about 2 per cent of the volume of ... windrow. Workmen dump the sack cement from the t... that follows the twin windrower.

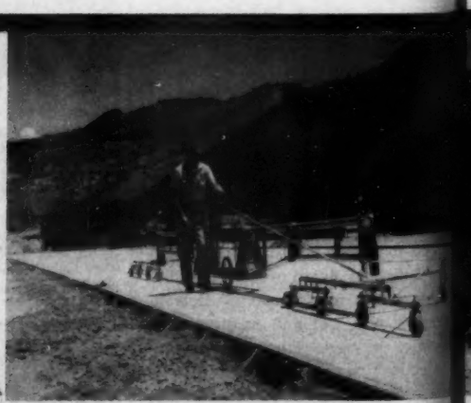
7 Final compaction is handled by a Tampo self-propelled roller with spray nozzles that wet down the surface and offset evaporation loss. Water is pumped from ballast tanks to nozzles. The finished base is primed with MC-2 cutback asphalt.

8 The 2-paver spread was never far behind base work, for the 34-E pavers set a rapid pace. At the head of the paving train, a Blaw-Knox Multifoote operates in the usual manner. Immediately behind is a Koehring 34-E Twinbatch traveling in the reverse direction.

9 The B-K Multifoote paver pulls a 3,000-g... water trailer that supplies both pavers. Two ... trucks with 2,500-gallon tanks keep the ... filled. The Cook Bros. trucks have Cook Batch ... 6-compartment bodies.

13 A Clipper self-propelled saw with Felker Di-Mat blades cuts the 2-inch-deep longitudinal joint. It is kept on center line by a template riding small flanged wheels at the slab edge. The tank on the Chevrolet truck supplies water. Transverse joints were sawed 8 to 12 hours after paving.

14 Pulling form pins is a quick job for the new Cleveland pin puller. It travels on the slab and the Heltzel paving forms. Forms are loaded by hand onto a truck. Some 23,000 linear feet of Heltzel forms was in use.



15 A Profilograph, built by the Materials and Res... Laboratory of the highway department, is use... check for roughness. It makes an accurate profi... the surface in the form of a graph. After a 10... cure, or a 450-psi test, the road was opened.

tract from Gibbons & Reed Co., Salt Lake City, Utah, the general contractor. Under its $5 million contract with the California Division of Highways, Gibbons & Reed the previous season had handled one of the most highly publicized operations in California—blasting out the new roadway. In the narrow canyon were the existing highway, for which there was no available detour, the Southern Pacific main-line tracks, a large wooden flume carrying water to a power plant, and the Truckee River. Blasting out a bench in the rock wall of the canyon required time, skill, and patience. But grading was done with only occasional damage to the flume or railroad, and with maximum traffic delays of two hours.

Paving of the 5.37 miles of double roadway from Floriston east to the state line was just as spectacular. Less than six weeks after the start, the job was done and the spread had moved to another job. On this project, the resident engineer for the California Division of Highways was John C. Petersen; assistant resident engineer was Ed Whitnack. Work was under the supervision of district engineer Alan S. Hart of District III. G. T. McCoy is California state highway engineer.

Since traffic had to be carried through the job at all times, there was some congestion, especially with batch and water trucks. But a pilot car carried the traffic through in one direction at a time without serious mishap and without excessive delay.

The road has a typical section consisting of two 24-foot-wide concrete roadways, separated by a 4-foot-wide median with 2.5 inches of bituminous surfacing on a 6-inch-deep cement-treated base. Four-foot-wide outside shoulders are also of cement-treated base with plant-mix surfacing.

The first step in the job was unusual. Instead of building the base and then setting the paving forms, Ball set the forms first, then processed and laid the base within the forms. This required an unusually long string of 9-inch forms. The finished base extended 1 inch above the bottom of the forms so that an 8-inch pavement could be laid. Aggregates for the cement-treated subgrade were produced on the job site by the general contractor and trucked into place. Then Ball's crews started a well-knit mechanized operation. . . .

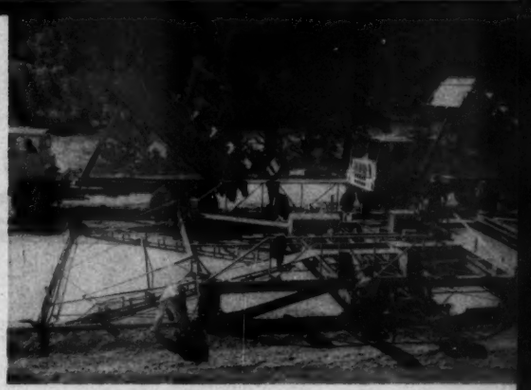
4 Taking the windrows one at a time, a Pettibone Wood Model 54 Roadmixer processes cement and aggregates, and adds water. A spreader attachment, designed by Ball's men, is hydraulically controlled from the operator's platform. The blade fills in low areas before initial compaction.

5 A 2,500-gallon tank on a Ford truck supplies water to the Roadmixer. Bringing up the rear are an Austin-Western 3-wheel roller, which compacts the material, and a subgrader that cuts the base to the exact grade required.

6 The Lewis subgrader rides the forms as it is pulled along by a Cat D8. Two more rollings follow before the grade is ready for the paving spread; one is done by a 3-wheel roller. Note that all operations take place within the forms.

10 The pavers work back to back, their booms close together, as they place concrete immediately ahead of the spreader. Trucks feeding the front paver line up ahead of the spread. Those feeding the rear paver turn around to face in the opposite direction.

11 A Blaw-Knox paddle-type spreader, towing a Lewis leveling attachment, strikes off the mix. The spreader carries a B-K pan-type vibrator and Dreyer vibrator heads alongside the forms. A B-K finisher with tamping bars, and a shop-made rig follow.



12 Final finishing is done by a shop-made rig built on the frame of an old Jaeger-Lakewood finisher. A pair of Lewis reciprocating screeds are at front, a Lewis V-float at rear. Ahead of the screeds, a reversible distributor paddle compensates for slump on this superelevation.

16 A Noble automatic batch plant pours out the 1½-yard batches well in excess of rated capacity. Trailers, left, hauling day and night to keep pace with the plant, dump aggregates to the receiving hopper of the stacking conveyor. An inclined conveyor, far right, brings sand from trap to plant.

17 The fully automatic plant, set on a tower to speed discharge directly to trucks, weighs out a complete batch when the operator presses a button to start the cycle. Another button is pressed to discharge the batch.

18 Cement delivered by Gar Wood double trailers is moved to bins by horizontal and vertical screw conveyors. The vertical screw operates well. Hunt's additive produces about 5 per cent of air in a 6½-sack mix. THE END

AASHO urges Congress to augment highway fund

Principal speakers at the opening general session of the convention, left to right, are Rep. George H. Fallon (D., Md.), chairman of the House Subcommittee on Roads; Claude R. McMillan, chief highway commissioner of South Carolina and 1958 AASHO president; and Sen. Albert S. Gore (D., Tenn.), chairman of the Senate Subcommittee on Roads.

Meeting in San Francisco stresses importance of steady pace on accelerated program

State highway officials, in a resolution adopted at the concluding session of the 44th annual meeting of the American Association of State Highway Officials, urged Congress to provide adequate financing to keep the accelerated federal highway program on schedule to "reduce death and injury on the highway and avoid serious economic impacts".

With 1,600 delegates and guests representing all but one of the state highway departments, plus visitors from Mexico, Canada, Puerto Rico, and Hawaii, the meeting was one of the largest in AASHO history. Sessions were held in the Sheraton Palace hotel in San Francisco during the first week of December.

The resolution on financing followed a series of addresses earlier in the week by legislators and other speakers, who stressed the importance of augmenting the funds now earmarked for the program. In the resolution, AASHO reaffirmed the ability and readiness of the various state highway departments to keep the interstate highway construction program on schedule if the necessary financing was done.

In other resolutions developing from the work of the association's committees, the AASHO also:

1. Endorsed proposed legislation to modify the navigational clearances for bridges.

2. Asked the Federal Communications Commission to allocate 12 more frequencies to the Highway Maintenance Radio Service.

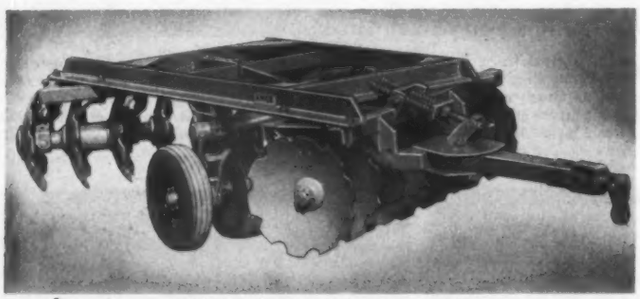
3. Asked Congress to exempt right-of-way transactions for highway purposes from the internal revenue stamp tax.

4. Recommended a study of the need for a Defense Highway System for the Territory of Hawaii.

Legislators speak

A potential deficit affecting the 1961 allocations from the Highway Trust Fund was one of the principal topics of discussion by the several speakers on the opening-day general sessions. AASHO president Claude R. McMillan, chief highway commissioner of South Carolina, opened the issue in his annual message with the suggestion that "the Congress can correct the situation simply by applying all of the special motor-vehicle taxes to the trust fund" to augment the fuel taxes and other present sources of revenue.

In later addresses, Sen. Albert S.



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FAST-ECONOMICAL-PROFITABLE!

TYPICAL AMCO USES . . .

LAND CLEARING . . . does primary breaking, chops weeds, brush and sod. Softens soil and adds humus to the ground for moisture content.

CUT AND FILL WORK . . . one of the most important steps in any construction job and a key tool to do it better. AMCO Harrows break soil into fine bits which allows pan equipment to fill quickly and completely. Especially effective over other machinery in breaking hard pan soil. Breaks up top soils in material pits, too.

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LANDSCAPING OPERATION . . . most effective in erosion prevention. Highway center strips, embankments, grounds around building projects and drainage works are disked prior to and after planting. Turns hay and straw into the ground to prevent soil erosion.

STABILIZING SOIL . . . blends in necessary water and humus — cuts impervious soils to accept moisture.

AERATION OF SOIL . . . either mixes in additional dry soil or lifts wet soil to dry before compacting.

SCRATCHING A COMPACTED SURFACE . . . to key in new lift, especially after a hard rain.

EXCELLENT FOR MIXING BASE materials and stratas for a homogenous fill.

FINE FOR MIXING MATERIALS AND AGGREGATES in macadam type road construction.

TYPICAL AMCO FEATURES

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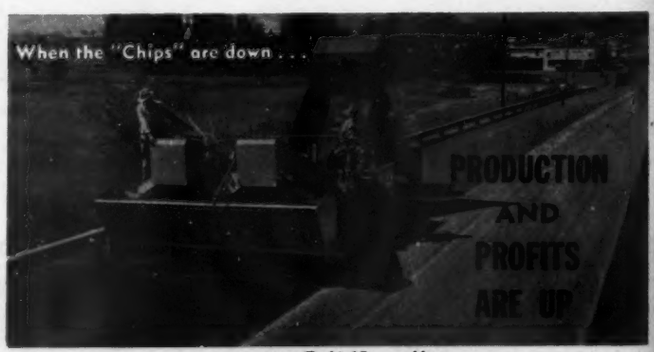

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Claude R. McMillan, right, 1958 president of AASHO, hands over the gavel to newly elected president Ralph R. Bartelsmeyer. McMillan is the chief highway commissioner of South Carolina. The new president is chief highway engineer of Illinois.

Federal Highway Administrator Bertram D. Tallamy gives a rundown on the status of the interstate program during the afternoon session of the opening-day program. Other afternoon speakers, seated left to right, are Sen. Francis Case (R., S. Dak.), a member of the Senate Subcommittee on Roads, and Rep. Gordon H. Scherer (R., Ohio), member of the House Subcommittee on Roads.

Gore (D., Tenn.), chairman of the Senate Subcommittee on Roads, and Sen. Francis Case (R., S. Dak.), ranking minority member of the committee, expressed the belief that the new Congress will resist the diversion of these taxes from the general funds or the appropriation of money from the general funds to augment the Highway Trust Fund.

Two of the suggested alternate methods of correcting the deficit include the issuance of bonds to be repaid by an extension of present federal highway taxes beyond their present expiration dates or an increase in the federal highway-user taxes.

Can be finished on time

McMillan expressed confidence that the respective states "not only have the capability of building the interstate highway system, but can build it in the scheduled 13-year period" if federal financing does not become an obstacle.

Cautioning highway officials to evaluate the economy of their own operations, McMillan said, "As administrators charged with the responsibility of engineering and building the roads, we must use the most economical means possible. It behooves each of us to exercise sound economic sense by fighting waste and unnecessary costs, regardless of the type of program, project, or system."

Sen. Gore reminded the highway officials that, because of the far-reaching effects of highway transportation in our complex economy, everyone is a "highway user" whether or not he drives an automobile. "Therefore," he said, "there is some question as to why we should restrict the financing of our highway program to highway-user taxes."

Emphasizing the importance of public support for the highway program, Gore urged a step-up in the construction of rural pavements. "Plans and acquisitions of right-of-ways are not enough for the people", he said. "They are impatient to see more pavement."

Commenting on the restriction of billboard advertising along new sections of the Interstate System, Sen. Gore likened the situation to the early days of "limited access". He said, "The Congress has determined

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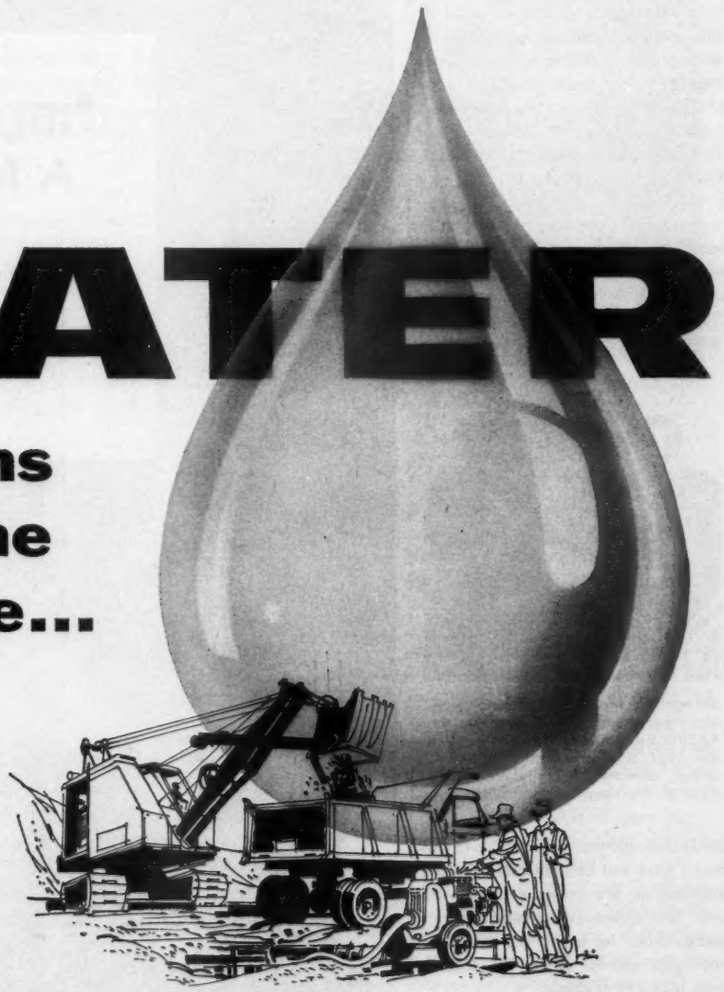
when
WATER
threatens
your time
schedule...



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(Continued from preceding page)

that it was in the national interest to regulate the use of the right-of-way and the areas adjacent. I think the public will support the state highway officials in protecting these roadside areas as they have in limiting access."

No stretch-out of program

Gore was emphatic in refuting any proposal to stretch out the proposed highway program, pointing out that the 1956 highway act expresses the intent to bring the Interstate System to simultaneous completion in all states in the 13-year period as nearly as is practicable. Noting that there is now a lack of uniformity in progress, he expressed the hope that all the states would soon get up to schedule and stay there.

Rep. George H. Fallon (D., Md.), who next spoke, expressed satisfaction with the progress on the interstate program, stating that construction contracts under way had doubled in value in the 11-month period from November, 1957, to September, 1958, and had reached the $2 billion figure on the latter date.

The Maryland congressman suggested several possible changes in the basic law, which would remedy the financing difficulties, make a decision on reimbursement to states for toll facilities that are incorporated into the Interstate System, and set up a

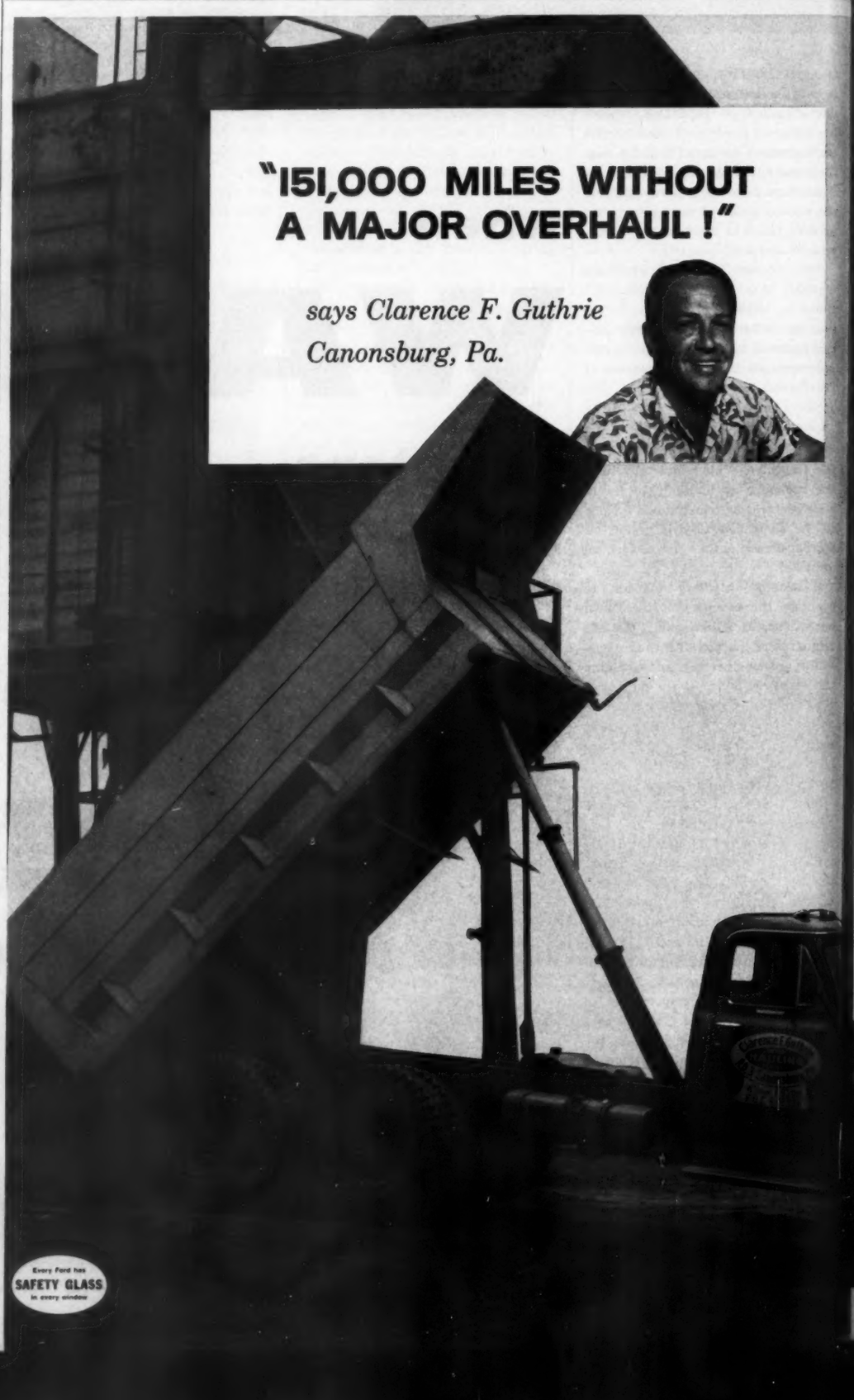
George T. McCoy, California state highway engineer, left, presents the AASHO past president's certificate to the 1957 past president William A. Bugge, director of highways of the state of Washington.

method of apportioning money to the states that will be applicable for the duration of the program. Observing that the Interstate System cannot stand alone, he urged the states to accelerate activity on the supplementary highway systems.

Confident that Congress will enact legislation to overcome the potential deficit in the trust fund, Fallon concluded by saying that "careful advance planning is a necessity for the kind of highway program now under way. The program must move forward smoothly without a succession of sudden stops followed by slow painful starts".

In the afternoon session of the opening-day program, the delegates heard from the ranking minority members of the respective Senate and House subcommittees on roads. Sen. Francis Case led off with a discussion of the three highway problems he felt would dominate the committee activities in the new Congress. The first of

Radiation monitoring instruments of a type that would be used to investigate radiation conditions along a highway are demonstrated at the BPR Emergency Planning Exhibit. Thomas P. Priola of the bureau, left, explains the use of the equipment. Looking on are Arthur G. Siegle, chief of defense plans and operations of the bureau; Clyde C. Colwell, assistant chief engineer of the Minnesota Department of Highways; and Earle E. Towlson, acting district engineer, New York.


"151,000 MILES WITHOUT A MAJOR OVERHAUL!"
says Clarence F. Guthrie
Canonsburg, Pa.
Every Ford has SAFETY GLASS in every window

these was the matter of new legislation to finance the Highway Trust Fund in keeping with anticipated expenditures. One of his suggestions for additional revenue was a windshield-sticker type of revenue stamp, which would be required on all vehicles and would be sold through post offices.

Highway safety legislation

The second problem discussed by Sen. Case was highway safety. Itemizing a number of proposals relating to traffic safety that have come up in past years, he said that "we can design and build roads for greater safety, but this will be for naught unless the man at the wheel has the competence and responsibility to drive safely".

On the third subject—that of reimbursement to states for toll facilities—the South Dakota senator concluded by saying that "while recognizing the merit in the principle of reimbursement, I believe we cannot accept any formula which would interrupt or delay the program now under way".

Following Sen. Case, Rep. Gordon H. Scherer (R., Ohio) expressed his views on highway matters. He cautioned that every effort must be made to resist breaking down the "needs" formula for the distribution of highway funds because the formula "is the key to the eventual success of this vital undertaking in which we are now engaged".

He warned the delegates that "we must be on constant guard against those who attempt to profit unfairly and illegally from public works programs" and added that "if there ever was a governmental program which needs public support and confidence, this is the one. Whatever we do must be done well and without taint."

In the concluding address of the opening-day sessions, Federal Highway Administrator Bertram D. Tallamy related that as of November, 1958, construction was under way on 3,679 miles of the Interstate System at an estimated cost of $2.25 billion. About 1,700 miles of the system are completed and in use. He said 3,603 bridges are under construction at present and 1,643 have already been completed.

Substantially all of the $400 million appropriated by Congress last year for the special emergency highway construction program had been put under contract by the December 1, 1958, deadline, Tallamy told the delegates. He stressed the point that all of these emergency projects "are being woven into the integrated road network. They are not leaf-raking or boondoggling projects."

Commenting on the excellent progress to date, he said, that "all of our problems are practically solved except the big one [the trust fund deficit]". Although revenues in the fund are $41 million over estimated receipts, right-of-way and construction costs have risen even more over their estimates, he pointed out.

The 1958 Thomas H. MacDonald AASHO Award for outstanding service is presented to George T. McCoy, right, California state highway engineer. D. C. Greer, Texas state highway engineer, presents the award.

Emphasizing the necessity for watching costs, Tallamy called for "eternal vigilance to assure that no frills or unnecessary items creep into construction plans". He added that "we must constantly be on guard against the provision of more interchanges than are justified on this basic highway network."

Tallamy stated, "City problems have become a major responsibility for all of us." Since the construction of major thoroughfares will set the pattern for urban development, he urged all the state departments to cooperate fully with their cities in developing appropriate long-range master plans.

Speaking out on the controversial and difficult subject of regulating outdoor advertising, Tallamy said, "The adoption of the national standards [for outdoor advertising in areas adjacent to the Interstate System] marks the real beginning of our task rather than the end. The basic responsibility for implementation and enforcement will be that of the state authorities."

On the subject of highway signs, the Federal Highway Administrator said, "One of the greatest accomplishments this year was the establish-

"Ford's 332-cu. in. V-8 is the hottest thing on the road for its size!

"Our fourteen Ford trucks all have exceptional durability records. Several '55 T-800 dumps, grossing 48,000 lb., have over 200,000 miles on 'em. They went an average of 150,000 miles before we touched the engine. And for power and performance, too, the Ford 332 engine is the hottest thing on the road for its size.

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"In addition to our sand and gravel business, we have ten Ford F- and C-800 tractors that make long, over-the-road trips hauling limestone one way and steel on the way back.

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Greater operating economy with new, faster rear axle ratios and wider choice of transmissions.

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Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina.

See your Ford Dealer today!

NEW '59 FORD F-600 DUMP carries a maximum GVW rating of 19,500 lb. Now available with optional 6000-lb. front axle for greater capacity, longer life.

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(*Continued from preceding page*)

ment of absolutely identical official traffic signing throughout the entire Interstate System. This is one of the most forward nationwide steps toward over-all uniform traffic-control aids that has been accomplished in many a year."

Emergency Planning Exhibit

Calling attention to the Emergency Planning Exhibit conducted during the meeting by the Bureau of Public Roads, Tallamy reminded the delegates of the importance of their role in the case of atomic warfare. "In the event of a surprise enemy attack", he said, "state highway officials and their staffs have a grave responsibility. It will be up to them to detect immediately the presence of atomic fallout on sections of the highway systems and post them at once to warn the public."

In the Emergency Planning Exhibit, many of the delegates saw a film describing atomic fallout and the means of detecting it. Radiation monitoring equipment was displayed and described by members of the Bureau of Public Roads staff, and highway officials were appraised of the part they must play in this event.

Concluding his address, Tallamy reported that the highway systems now being built "are on schedule and in accordance with expectations".

McCoy gets award

Another highlight of the opening-day session was the award to George T. McCoy, California state highway engineer, of the Thomas H. MacDonald AASHO Award for outstanding service. Twenty-five-year meritorious-service awards were presented to 246 employees of member highway departments and the Bureau of Public Roads.

About half of the five-day conference was devoted to committee sessions dealing with a variety of topics. Some of these subjects were roadside development, traffic, use of radio, concrete piles, aluminum bridges, paving materials, interchange design, accounting, highway signing, maintenance, equipment, construction, electronic computers, public information, and a wide variety of others. At the well attended committee sessions, discussions usually followed the presentation of the prepared papers.

One full day was used for a field trip, and 775 delegates and their wives toured the San Francisco Bay area by bus. In addition to inspecting a number of types of highway construction in the area, they visited such landmarks as the Golden Gate Bridge, the University of California campus, the new Carquinez Bridge, and the Claremont Hotel in Berkeley where lunch was served.

Elect new officers

At the concluding session of the conference, the delegates named a new slate of officers for 1959 headed by Ralph R. Bartelsmeyer, chief highway engineer of Illinois, who succeeds Claude R. McMillan as AASHO president.

Other officers named in the election are as follows:

First vice president, David H. Stevens, chairman of the State Highway Commission of Maine.

Regional vice presidents: Region I, J. N. Robertson, director, Department of Highways, District of Columbia; Region II, R. B. Richardson, director, Department of Highways, Louisiana; Region III, John C. Mackie, commissioner, State Highway Department, Michigan; and Region IV, William E. Willey, state highway engineer, Arizona.

Named to new terms on the executive committee were F. A. Davis, commissioner, Department of Highways, Virginia; John O. Morton, commissioner of the highway department in New Hampshire, and William A. Bugge, director of highways of the State of Washington.

E. L. Roettiger, state highway engineer of Wisconsin was renamed treasurer.

Boston was named as the location for the 1959 annual meeting.

THE END

Clark Bros. opens branch

A new Denver, Colo., branch office has been opened by Clark Bros. Co., Division of Dresser Industries, Olean, N. Y. Located at 621 17th St., the new office will handle the sales engineering of Clark compressors and gas turbines in Colorado, Wyoming, and Montana.

Jay B. Williams is manager of the branch.

Two Texas companies are acquired by G-D

The Mayhew Machine Co., Inc., and Mayhew Supply Co., Inc., both of Dallas, Texas, have been acquired by the Gardner-Denver Co., Quincy, Ill. The acquisitions, involving over $5 million, were effected by an exchange of Gardner-Denver common stock for all the stock of the Mayhew companies.

Mayhew Machine is a large producer of seismograph and geophysical drilling equipment for the oil industry, and also manufactures light oil-well drilling rigs and rotary drilling equipment for the construction and mining industries. Mayhew Supply is the sales organization that markets these products.

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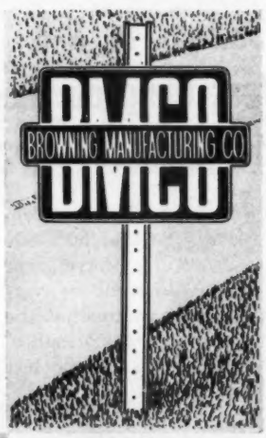

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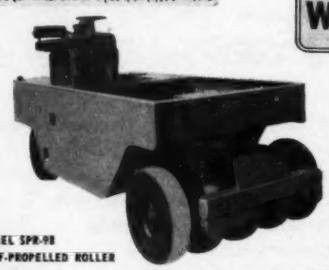
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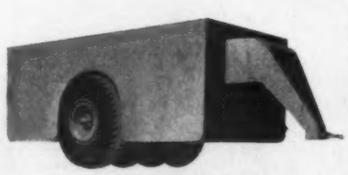
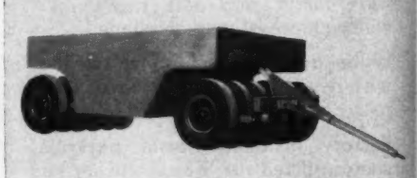
ONE WAY


MODEL HP-4 COMPACTOR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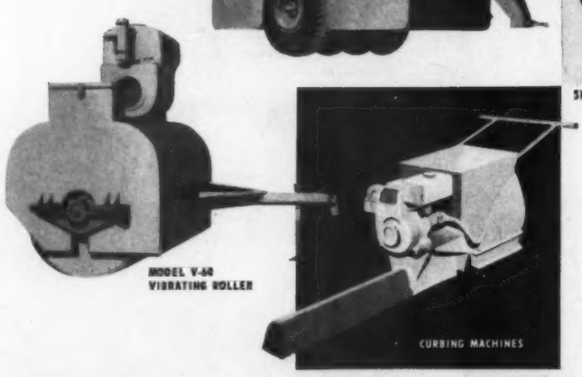
MODEL V-60
VIBRATING ROLLER

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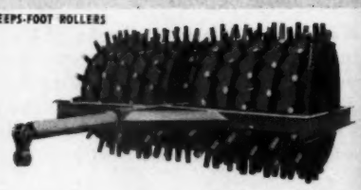
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C&E to publish Daily again at dealer meet

Dealers and manufacturers attending the 40th Annual Meeting of Associated Equipment Distributors in Chicago the last week of this month will again be greeted each morning by the *AED Convention Daily*, the tabloid-size newspaper published each year during this important convention by CONTRACTORS AND ENGINEERS.

The distributors' meeting begins Sunday, January 25, with opening sessions scheduled for Monday, and ends Thursday, January 29. The *AED Convention Daily* will be published Monday, Tuesday, and Wednesday, January 26, 27, and 28.

As before, the *Daily* will report both in news stories and with photographs the business of the convention. Personalities and manufacturers' products will be spotlighted. Special features this year will include article-length interviews with dealers and officials of representative manufacturing firms, as well as two survey articles giving a cross section of distributor opinion on important industry issues.

Again, manufacturers' advertisements will call attention to the machinery and materials they wish to spotlight.

A staff of reporters, photographers, and production people, headed by William H. Quirk, editor, and William T. Darden, managing editor, will be on hand to make the *Daily* a timely convention paper.

More than 3,000 copies of each day's edition will be distributed to rooms in the Conrad Hilton Hotel, convention headquarters. Copies also will be available at the AED registration desk and other key points.

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ALABAMA
Ray-Brooks Machinery Co., Inc., Montgomery, Mobile
Tractor & Equipment Co., Inc., Birmingham
ARIZONA
Nio-A-Cau Equipment Company, Phoenix
ARKANSAS
Kern-Limerick, Inc., Little Rock
CALIFORNIA
Action Equipment Company, Stockton
CANADA
Ontario Equipment & Supply Limited, Toronto, Ont.
Coleman Machinery Company Ltd., Halifax, N.S.
Purves Ritchie Limited, Vancouver, B.C.
W. F. Fuller Company Ltd., Regina, Sask.
Kane Equipment Limited, Winnipeg, Man.
Laurion Equipment Limited, Montreal, Que.
FLORIDA
Florida-Georgia Tractor Company, Lakeland, Jacksonville, Tallahassee, Orlando, Tampa, North Miami Beach
GEORGIA
Tractor & Machinery Company, Atlanta
IDAHO
The Sawtooth Company, Boise, Idaho Falls, Twin Falls
ILLINOIS
McAllister Equipment Company, Melrose Park
Machinery, Inc., Springfield
Peoria Machinery, Inc., Peoria
IOWA
Hawkeye Machinery Company, Des Moines
KANSAS
Southwest Equipment Company, Dodge City
The Victor L. Phillips Company, Wichita
MARYLAND
John C. Louis Company, Inc., Baltimore, Washington, D.C.
MICHIGAN
The Acme Equipment Company, Detroit
MISSOURI
The Victor L. Phillips Company, Kansas City
Machinery, Inc., St. Louis
MONTANA
Hall-Perry Machinery Company, Billings, Butte, Great Falls, Missoula
NEBRASKA
Nebraska Machinery Company, North Platte, Scottsbluff
T. S. McShane Company, Inc., Omaha
NEW JERSEY
Equipment Distributors, Inc., Little Ferry
NEW MEXICO
H. C. Ribbie Company, Albuquerque
NEW YORK
Rochester Road Equipment Inc., Rochester
NORTH CAROLINA
J. D. Hunt & Sons, Inc., Raleigh, Charlotte
NORTH DAKOTA
Schultz Machinery Company, Bismarck, Minot
OHIO
Lavenz Equipment Company, Columbus
J. J. Turner, Inc., Cleveland
OKLAHOMA
Burt Smith Road Machinery Co., Enid, Oklahoma City, Tulsa
OREGON
Cal-Ore Machinery Co., Inc., Medford
Wood Tractor Company, Portland
PENNSYLVANIA
Anderson Equipment Company, Pittsburgh, Bridgeville
Stewart Equipment Company, Philadelphia
Stewart Equipment Co., Harrisburg
SOUTH CAROLINA
Southern Equipment Sales Company, Columbia
SOUTH DAKOTA
J. D. Evans Equipment Company, Rapid City, Sioux Falls
TENNESSEE
Tri-State Equipment Co., Inc., Memphis
Story Brothers, Inc., Knoxville, Chattanooga
Southern Machinery Co., Inc., Nashville
TEXAS
Berry Bros. Machinery Co., Dallas
Caprock Machinery Company, Amarillo, Odessa
The Roy Kleaner Company, San Antonio, Corpus Christi
Pearce Equipment Company, Houston
Rio Grande Machinery Co., El Paso
UTAH
Archer Tractor & Machinery Co., Salt Lake City
VIRGINIA
Hampton Roads Tractor & Equipment. Co., Norfolk
Shelton-Witt Equipment Corp., Salem
WASHINGTON
American Machine Company, Spokane

Clark International has headquarters at Havana

Clark Equipment International, C. A., has established headquarters at Havana, Cuba. The wholly owned subsidiary of Clark Equipment Co., Buchanan, Mich., handles all overseas business for the parent company and has numerous licensing and manufacturing arrangements for the firm's products in Europe and the Orient.

The Havana office, at 171–173 23rd St., Vedado, will be under the direction of Martin E. Graham, vice president and general manager of the subsidiary. Key personnel will include C. W. Massie, general manager of the international operations of the firm's Construction Machinery Division, assisted by K. G. Larson, and S. C. Dillon, who will handle the Clark line of fork trucks and material-handling equipment.

Pipe-drafting book

The "Fundamentals of Pipe Drafting", by Charles H. Thompson, is now available for $3.50 from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Chapters discuss methods of representing piping symbols, diagram drawing, pipe and pipe fittings, specification of parts, general arrangement and diagram drawings, detail drawing, and a glossary. Diagrams, tables, and pictures abound in the book.

Esco appoints Johnson

Dar G. Johnson, Jr., has been promoted to assistant general sales manager of Electric Steel Foundry Co., Portland, Ore. Robert L. Zwald takes over Johnson's former post as advertising manager.

Universal Atlas news

W. Owen Lawrence has been appointed to the newly created position of assistant vice president of engineering and research for Universal Atlas Cement Division, U. S. Steel Corp., New York City. At the same time, the company also named J. Palmer Camm and Roald W. Nygaard general manager and assistant general manager of operating, respectively; Chester D. Rugen assistant to the vice president of manufacturing; F. P. Diener and Arthur Horen director and assistant director of research, respectively; and Francis A. Hennigan assistant chief industrial engineer of operating. These changes concern the home office.

Company changes name

Spring Lock Scaffolding Co. is the new name for the Saf-T Scaffolding Co., Philadelphia, Pa. The new name describes more accurately the firm's scaffolding product, which recently has been patented.

Army makes huge crane air-transportable

A commercial truck-mounted crane, which is big and sturdy enough to handle and erect the Army's Redstone missile, has been redesigned to meet military air-lift requirements by the U. S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va.

Equipped with a 90-foot boom, the 58,000-pound crane is air-transportable in sub-assemblies. To meet dimensional and weight limitations, the revolving superstructure can be quickly removed from the truck chassis, and the upper portion of the carrier cab can be disassembled. The truck and crane are powered by 160 and 104-hp engines, respectively.

Hard-to-reach places are easy for the powerful Viberette in prestress work in narrow forms

Gasoline-powered Model VG shown—drives and heads interchangeable with electric-powered Model VE.

THE PERFECT SOLUTION for concrete compaction in restricted areas is a Viberette Vibrator with small diameter flexible drive and head with replaceable rubber or steel tip.

The 12,000 rpm speed and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete—in narrow construction forms, narrow stems of prestress T-sections and other hard-to-reach places.

Easy portability and one-man operation keep labor costs to a minimum.

WRITE TODAY for full information!

Advantages

Powerful, 4-cycle, air-cooled, 3 HP gasoline engine. Modern no-slip timing belt drive.
Interchangeable heads—1", 1 5/16" and 1 3/4" diameter.
Replaceable rubber or steel tips on 1 5/16" and 1 3/4" heads.
Flexible drive lengths—10' to 20'.
Quick release drive connection.

Viber Company, 726 South Flower Street Burbank 20 California

VIBER CO. VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 280

It COSTS LESS To BUY the BEST

NEW MODEL H-90

GIVES YOU MORE VALUE FOR YOUR MONEY...MORE CARRY CAPACITY...MORE PERFORMANCE...MORE DEPENDABILITY

When it comes to investing money in equipment which must earn money, you can't afford anything but the best. Thousands of owners have found this to be true of the famous HO "PAYLOADER"... thousands more will find it even more so in the new, improved Model H-90.

Full 9,000-lb. Carry Capacity

You can lift loads up to 15,000-lbs., but you can CARRY LOADS up to 9,000-lbs. which means you can use buckets ranging up to almost 4 cu. yds., depending on the weight of the material. Because the bucket tips back 44° at ground level, you can carry 9,000-lb. loads closer to the machine and lower with better balance, stability, speed and less spillage. All excess "dead weight" has been eliminated and through balanced design, the H-90 can carry more pounds in the bucket than comparable machines weighing as much as 3,000-lbs. more.

More Powerful Breakout

A breakout force of 21,000-lbs., almost the entire weight of the machine, can be applied to the cutting edge of the bucket through unique pry-out pads. This enables you to get full bucket loads in the toughest digging.

Choice of Four Engines

The new H-90 gives you a choice of two gasoline engines and two diesel engines: either the 125 H.P. Hercules WXLC-3 or the 134 H.P. I-H U-450 in the gasoline, and the 122 H.P. Cummins JN-6-B1 or the 126 H.P. G.M.C. 4-71 in the diesel.

Extra Heavy-Duty Planetary Axles

Because tractor-shovels of this size and capacity are subjected to greater than average stresses and strains, the H-90 "PAYLOADER" planetary axles are special, extra heavy-duty type with power transfer differentials.

Full Protection for Long Life

The brakes of the front wheels are sealed to prevent scoring and glazing by foreign matter. Large oil-bath air filters and cartridge-type oil filter protect the engine. Two cartridge-type oil filters protect the hydraulic system oil and the transmission-torque converter oil.

Easy, Full-Power Operation

Power-shift transmission with three speeds forward and reverse, plus twin-cylinder power-steer and 4-wheel power brakes, assure fast operation with minimum operator effort... promote a high production rate the full shift.

More Attachments... More Uses

The widest choice of attachments are available, including these exclusive ones: Drott 4-in-1 bucket, Superior side-boom, Galion vibratory compactor, Ram black-top spreader... also blower, "V" and blade plows, angling back filler, scarifier, winch and others.

THE FRANK G. HOUGH CO. 1-B-1
762 Sunnyside Ave., Libertyville, Ill.
Send data on new Model H-90 PAYLOADER

Name _____

Title _____

Company _____

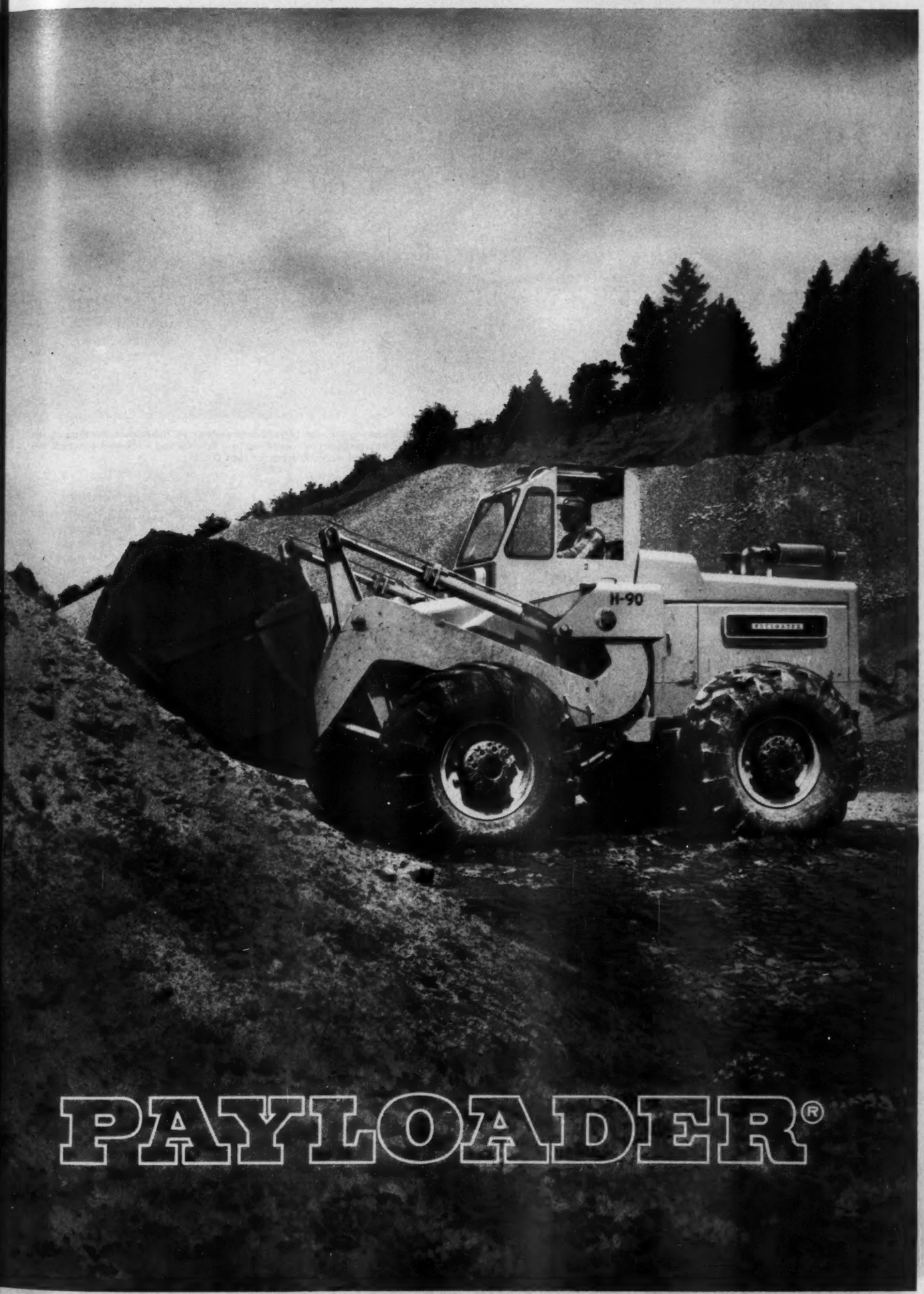
Street _____

City _____ State _____

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 281


H-90
PAYLOADER®

A Euclid loader pulled and pushed by tractors accounts for most of the 100,000 to 125,000 yards of dirt moved in the 20-hour day at the Richard I. Bong Air Force Base, Kansasville, Wis. Chunky clay from the 2-foot cut rides up the 54-inch belt to a Euclid 17-yard bottom-dump in 30 seconds. The man on the platform signals drivers when rigs are full. Cutting edge and conveyor are controlled hydraulically from the lead D9.

During the noon break, when other rigs are also being serviced, the cutting edge of the loader is built up with Amsco hard-surface rod.

Peat is spilled into a Euclid 17-yard bottom-dump by one of the three draglines excavating in a bog area at the site. The excavation will be filled with granular material before the subgrade is built.

An Austin-Western Super 99 grader levels off the top of the subgrade with its 16-foot blade. The man on foot assists the operator by checking the grade.

Fill material put down in 6-inch lifts is compacted by a LeTourneau-Westinghouse Model 120 sheepsfoot roller pulled by a LeT-WesCo Tournartactor.

Army of men and equipment reaches for production record on air-base grading job

Some 130 pieces of equipment move 125,000 yards of dirt in 20-hour day at rate of 44 cents per yard

by **BILL ALLEN, field editor**

When a contractor sets out to move 10 million yards in a short working season, he has to have a lot of equipment, a good field organization, and a hustling maintenance force.

With all these assets, S. J. Groves & Sons, Minneapolis, was well on its way to setting a production record late last year. Since the start of work, they had harvested some ten million yards of dirt in the grading of the Richard I. Bong Air Force Base, Kansasville, Wis., some 60 miles northwest of Chicago.

With about 130 pieces of earthmoving equipment in the field and 350 men on the payroll, Groves was moving between 100,000 and 125,000 yards

of dirt in a 20-hour working day.

The countryside vibrated with the roar of heavy diesels as nearly fifty scrapers gouged off the tops of the rolling hills. Like a giant plow, a belt loader moved down the long cuts. It sliced off the tough clay, and an endless line of bottom-dumps moved alongside to catch the material. Working in the peat bogs, three big draglines tirelessly swung the muck from bog to belly-dumps.

As men and equipment fought the dirt, lube trucks darted in and out among the big rigs, administering their own brand of first aid to the weary machines.

◄ With 2-foot right and left-hand extensions, this Galion T-700 Grade-O-Matic motor grader blades to an 18-foot width at the air base. Equipped with torque converter and power-shift transmission, it is one of the big producers in the spread.

Topsoil spills over the bowl of the Euclid Twin TS-24 scraper as it is assisted by a Cat D9 during the early part of the work. About 2 million yards of topsoil was stripped before grading started. ►

First contract at SAC base

In the bidding for the first contract on the multimillion-dollar base, Groves edged out Western Contracting Corp., Sioux City, Iowa, by a mere $27,000. Groves bought the contract for $13,606,998; this included 13 million cubic yards of excavation at 44 cents a yard.

In addition to the extensive grading, the contract includes the building of the 11,500 × 200-foot runway with 75-foot-wide matching taxiways, plus drainage work.

Equipment on the job

- 46 rubber-tire scrapers, mostly Euclid 18-yard rigs, with some Cat DW21's, and 2 LeTourneau-Westinghouse Model D's.
- 6 Euclid TS-24 twin-engine scrapers
- 1 Euclid loader
- 27 Euclid 17-yard bottom-dumps
- 32 Cat D8 tractor-dozers
- 12 Cat D9 tractor-dozers
- 10 Galion, Austin-Western, and Cat motor graders
- 2 LeTourneau - Westinghouse Tournatractors
- 2 Northwest Model 95 and 1 Model 80D dragline
- 8 Euclid 15-yard end-dumps
- 1 Cat Traxcavator
- 1 International TD-20 with 4-in-1 loader

The base, being built under the supervision of the Chicago District of the U. S. Army Corps of Engineers for the Strategic Air Command, includes such community facilities as dormitories, hospital, open messes, theater, chapel, dining room, and water and sewerage systems.

Loader heads equipment parade

The big job for Groves, however, was to make 960 acres of wooded Wisconsin hills look like the treeless plains of Nebraska. It took a lot of men and equipment.

The single piece of equipment accounting for most of the dirt was a loader pulled and pushed by tractors. The loader ate away at the sides of the 2 to 4-foot-deep cuts, and as it moved along, the chunky clay rode up the 54-inch belt and cascaded into 17-yard bottom-dumps.

Three men ran the loader. By means of hydraulic controls, the operator of the lead tractor controlled the tilt on the cutting edge of the

(*Continued on next page*)

For more facts, use coupon or circle No. 282→

Save maintenance time and costs—

—with a Black & Decker Valve Refacer

Your trucks, crawlers, loaders and other equipment will be back on the job faster—to stay—with a Black & Decker Valve Refacer in your shop!

Features like B&D's super-speed air chuck: grips and releases valve stems *instantly* for maximum speed—accurate alignment every time; offset spindle: enables grinding of all valve face angles from 0° to 90°; and two motors for smoothest power—constant speed, add up to one profit-saving fact:

Your equipment is in the shop less time—doesn't come back for expensive "do-it-overs!" See for yourself, in your own shop; mail coupon for a demonstration.

Look Under "TOOLS-ELECTRIC" in Yellow Pages

Leading Distributors Everywhere Sell

Black & Decker®

Quality Electric Tools—Power-Built to set the pace

MAIL TODAY FOR FREE DEMONSTRATION

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☐ Please arrange a free demonstration of your No. 626 Valve Refacer.

☐ Please send me additional literature.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

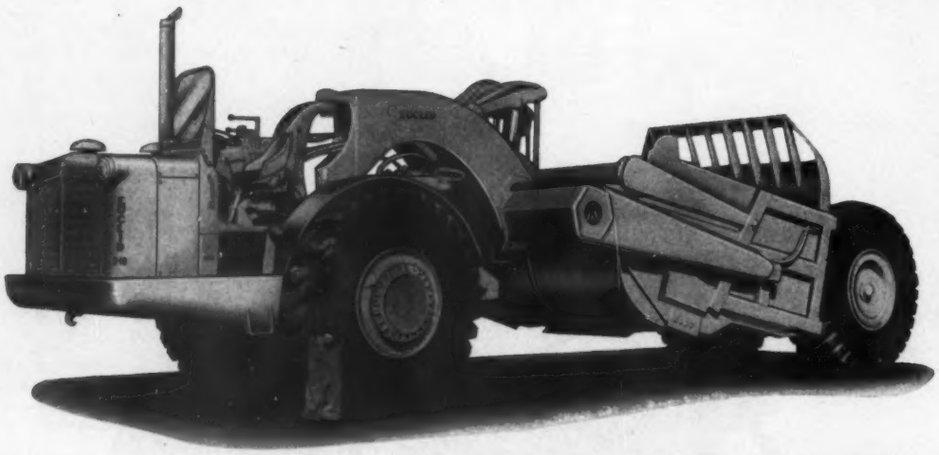
These B&D Tools in your shop help cut maintenance costs!

Drills | Impact Wrenches | Vibro-Centric Systems | Sanders

◄ Maintenance plays a big part in keeping all the spreads productively at work. This Graco 7-reel lube unit on a Ford F700 services a Cat DW21. The truck is equipped with an I-R Gyro-Flo 85-cfm compressor and a Kohler light plant.

Repair work is done on the rear engine of a Euclid TS-24 scraper by mechanics from Adams Machinery, Inc., Milwaukee. Under construction in the background is the contractor's Steelcraft maintenance building to house five equipment stalls and a parts room.

Now..."Euc" S-18 Scraper has struck capacity of 21 yds.



You get even more productive capacity in the new S-18... here are some of the reasons why:

- capacity increased from 18 to 21 cu. yds. struck... carries up to 30 yds. heaped
- more horsepower... 325 h.p. improves power-to-weight ratio
- 4-speed Torqmatic with converter lock-up... maximum power and fuel economy on grades and high speed hauls
- greater structural strength... designed for push-loading by the biggest tractors

See your Euclid dealer for complete data on the improved S-18... he'll be glad to explain the production advantages of this new scraper.

Hydraulic lever action provides fast, independent control of all scraper operations... eliminates cable "headaches"... permits controlled spreading of the load.

Torqmatic Drive pays off in faster cycle time and better production. There's no clutching or loss of momentum when changing to any of the 4-forward speeds. Converter lock-up provides direct drive for grades and long hauls.

EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, use Reader-Reply Card opposite page 18 and circle No. 283

(Continued from preceding page)

loader, the up-and-down motion of the cutting edge, and the starting and stopping of the belt. The operator of the rear tractor kept his machine pushing the loader. A third man, stationed on a platform on the conveyor frame, guided the bottom-dumps in and out of the heavy fall of dirt. He had to be on his toes, for it took only about 30 seconds to load the 17-yard trucks. To make loading more difficult, both truck and loader were in motion.

The loader was particularly suitable for the long cuts on this job. On the 2,000-foot-long "islands of dirt" not much time was lost in changing the direction of the loader. In firm but not too tough clay, the machine produced about 1,000 yards per hour. Wet ground conditions, however, often brought the operation to a halt. When the clay was slick, it was very difficult for the bottom-dumps to move in and pick up their loads.

Big scraper fleet

About 80,000 yards of excavation per day was accounted for by the fleet of 46 rubber-tire scrapers. Generally worked in three spreads, they included six big rigs with front and rear-drive engines and two small scrapers for fine-grading.

A fleet of ten motor graders maintained the haul road for the scrapers, and also finished off the top of the subgrade.

Peat bogs

Before parts of the subgrade could be built, peat bogs had to be cleared out to depths up to 20 feet. This excavation was done by three draglines loading into 17-yard bottom-dumps. The bog areas were later built up with granular material.

Careful compaction of subgrade

Because of the unstable nature of the clays in the subgrade, tight compaction specifications had to be met. In the upper 14 inches of the subgrade, clay material had to be compacted to 90 per cent density and within 2 per cent of optimum moisture. Although there was no moisture specification on granular material, it had to be compacted to 95 per cent. The only exception to this figure

Operators check water and oil in their Euclid 18-yard scrapers just before the fleet shoves off after the noon break.

was the top 6 inches of the subgrade, which was held at 100 per cent. Both sand and clay in the lower part of the fill had to be compacted to 95 per cent. As an added precaution, the subgrade will be allowed to stand seven months before receiving paving.

The fills were put down in 6-inch lifts and compacted with 60-ton rubber-tire rollers, as well as sheepsfoot rollers. Normally, it was not necessary to add water, since the 17 per cent moisture in the clay banks was above optimum.

Maintenance keeps machines moving

A good program of preventive maintenance kept practically the entire army of equipment on the move. A maintenance force of 60 men and three lube trucks was on the job around the clock.

When the equipment was in need of repair, it was brought to the Steelcraft 120×60-foot maintenance building. The all-steel building, built specially for this job, is equipped with five equipment stalls and a parts room.

Pavement design

Runway and taxiway pavements, which are designed for 265,000-pound wheel loads, have a constant thickness of 56 inches. This figure includes an unreinforced-concrete pavement, a stabilized aggregate base, and a course of filter material. There are four basic pavement designs, with the thickness of concrete varying from 20 to 14 inches. In all cases, a 4-inch layer of filter material is placed between the stabilized aggregate base course and the subgrade.

Personnel

For the U. S. Army Corps of Engineers, Col. J. B. W. Corey, Jr., is the Chicago District engineer. Maj. George L. Schumaker is the resident engineer, and Ralph Pyszynski is the chief inspector.

With S. J. Groves & Sons, A. J. McKay is the project manager for the Illinois District. E. D. "Red" Sargent is the project manager on the job. Ed Lundin is project super, as well as safety engineer. Frank Tomsyck is project engineer.

THE END

The Massachusetts Turnpike Authority took in $894,788 in total revenue for November, 1958. This is a 13 per cent increase over the same month in 1957.

For more facts, circle No. 284+

Mellon-Stuart appoints

H. D. Sheridan has been appointed executive assistant at Mellon-Stuart Co., Pittsburgh, Pa., construction firm. He will assist E. P. Mellon II, board chairman, and D. C. Peters, president, in new business development.

C-R-C appoints Stone

Don V. Stone is the manager of the new Kelley Ripper Division of Crutcher-Rolfs-Cummings, Inc., Houston, Texas. He will work with Caterpillar dealers throughout the United States to promote the Kelley ripper, a heavy-duty hydraulic unit for use with D9, D8, and D7 tractors in construction work.

Marlow Pump promotes

A. F. Woods has been named general sales manager of the Marlow Pump Division, Bell & Gossett Co., Midland Park, N. J. Formerly sales manager for the division, Woods' duties and responsibilities include all Marlow sales both here and abroad.

West Brick Buggy news

The manufacturing facilities of the West Brick Buggy Corp. have been moved to a new plant at 33000 Lakeland Blvd., Eastlake, Ohio. The new building will permit a more efficient plant layout for producing the West Skytrak and the Brick Buggy equipment.

Executive and sales offices will remain at 4310 Mayfield Road, Cleveland.

A Stang wellpoint system, engineered by professionals and installed by specialists, is predraining and stabilizing this excavation in the middle of the Cimarron River. There are no obstructions, the working area is free and dry, the excavation slopes are firm and steep. The system is efficient, fast, flexible and economical. This is typical of Stang jobs.

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems • Dewatering Planning • Equipment • Service

Putting water in its place ...anywhere!

JOHN W. STANG CORPORATION
8221 Atlantic Avenue, Bell, California
Tacoma • Minneapolis • Omaha • Tulsa • Mobile • St. Petersburg

SEAMAN-GUNNISON *brings to contractors*

- **PNEUMATIC COMPACTION**
- **SMOOTH STEEL ROLLING**
- **VIBRATORY COMPACTION**

in the single low-cost, self-propelled

TRI-PACTOR!

The new Seaman-Gunnison vibratory roll is available as trailing type, gasoline or Diesel powered. Impact frequency is controlled by tractor operator without leaving seat.

Vibratory roll, above, on new Seaman-Gunnison TRI-PACTOR is a heavy steel tamping roll with ballasted weight and impact frequency range to compact a wide range of soils and granular materials. Exclusive new design gives deep impact that fills voids, and produces uniform densities at time-saving speeds. The tamping roll is hydraulic-powered, completely spring-insulated from body of TRI-PACTOR. The vibra-impact mechanism is completely outside steel roll . . . simplifying service and maintenance.

Contractors endorse DUO-PACTORS by repeat purchases on 5,000,000 cu yd Wisconsin Interstate 94

R-W Construction Co., Milwaukee, Wis., holder of three contracts, operates a fleet of three Duo-Pactors.

Kramp Construction Company, Milwaukee, Wis., increased its Duo-Pactor fleet to four units. Griffith Construction Company, Racine, Wis., bought a second Duo-Pactor. Jos. D. Boness, Inc., also standardized on Duo-Pactors.

At the start of construction last spring, five Duo-Pactors were among compaction equipment used by four contractors holding contracts for five sections of Interstate 94, Illinois state line to Milwaukee city limits. As job progressed, *seven more Duo-Pactors* were put on these jobs for 4,976,500 cu yd of fill PLUS gravel base compaction, and for bituminous-surfaced local access roads. The reason: *lower compaction costs, plus speed and maneuverability to keep up with the scraper fleets.*

The DUO-PACTOR developed by Seaman-Gunnison combined for the first time rubber and steel rolls in a low-cost self-propelled unit. Its development was the result of more than a quarter-century of pioneering soil stabilization equipment. Contractors in all sections of the nation have proven its ability to produce maximum densities at lowest compaction costs.

Now, compaction costs can be slashed still further! To the Duo-Pactor's steel roll has been added *vibratory* action, forming the new Seaman-Gunnison TRI-PACTOR. By combining pneumatic compaction with either static or vibratory steel roll . . . **the TRI-PACTOR assures densities of 100%-plus at high production rates, at minimum operating cost . . . often saving up to 50 per cent or more in equipment cost and the power to operate.** At the touch on a lever, you *instantly* adapt the TRI-PACTOR to every change in job conditions:

1. High density pneumatic compaction with eight closely-spaced rubber rolls. Rolls are mounted in pairs on torsion springs for controlled oscillation, producing *uniform* densities despite surface irregularities. Compactive pressures up to 100 psi can be applied.

2. Steel roll (without vibration), presses in materials between rubber roll tracks, thus unifying densities across the entire rolling width and attaining specified densities in fewer passes. Also used for smooth steel rolling on crushed rock and gravel bases; seal-coating; bituminous, cement, and other soil stabilizations.

3. Dynamic vibratory compaction—a heavy tamping steel roll—compacts a wide range of soils as well as granular materials *at production speeds.*

The TRI-PACTOR has been job-tried and service proved. On one recent airport runway extension job for jet plane requirements, it proved the *only* equipment able to produce base course densities over 100 per cent modified AASHO at production speeds. *If you are faced with difficult compaction problems—if you want to increase earth-moving profit margins* through lower compaction costs, write or phone today!

SEAMAN GUNNISON

Write for informative bulletins . . . giving complete TRI-PACTOR SPECIFICATIONS; also Duo-Pactors with mid-ship or trailing steel roll, with regular, dump, or water-ballast bodies. Choice of prime movers.

Seaman-Gunnison Corp. **Telephone: ORchard 1-0114**
2763 S. 27th Street, Milwaukee 15, Wis.

Please send free bulletins as checked below:

☐ TRI-PACTOR ☐ DUO-PACTOR ☐ Trailing Vibratory Roll ☐ Utility Scraper
☐ Duo-Flo Bituminous Distributor ☐ Hydro-Jet Street Flusher

Name_____

Title_____

Company_____

Street_____

City_____ State_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 281

PCA elects directors, chairman of the board

Cris Dobbins has been elected chairman of the board of directors of the Portland Cement Association. He succeeds George E. Warren. At the same time, nine new directors were elected: Charles Baumberger, Jr., Ben W. Calvin, Richard A. Grant, M. E. Grunewald, R. D. Raff, Erik Thune, Walter H. Wulf, B. F. Cox, and H. B. Robeson.

The association has appointed Hugh D. Barnes assistant vice president and Anthony G. Sabato auditor. Barnes also holds the newly created post of supervisor of field promotion, directing operations in all district and regional offices.

John M. McNerney, district engineer at the Los Angeles office, succeeds Barnes as Western regional manager. He will hold both posts until a new district engineer is appointed.

Four companies have been elected members of the association: Halliburton Portland Cement Co., Corpus Christi, Texas; Saskatchewan Cement Co., Ltd., Regina, Sask., Canada; Northern California Division of Ideal Cement Co., San Francisco, Calif.; and Oregon Division of Ideal Cement Co., Portland, Ore.

At the same time, the association has re-established field service in northern California through a new San Francisco suboffice of its Los Angeles district office. Service to cement users in Oregon will be furnished through the Seattle, Wash., district office.

SAME post honors Killian

Dr. James R. Killian has received a scroll from the New York City Post of the Society of American Military Engineers in appreciation for past and present services to this country. Dr. Killian, a distinguished scientist and former president of the Massachusetts Institute of Technology, is a special assistant to President Eisenhower for science and technology.

Engineering firm names new associate member

Jack Wood has become an associate in the firm of Harland Bartholomew and Associates, city planners, civil engineers, and landscape architects of St. Louis, Mo. During the past year and a half, Wood was assigned to the Indian Institute of Technology, Kharagpur, India, as consultant and professor of regional planning under the U. S. International Cooperation Administration program in India. Prior to that, he was professor of city and regional planning at the University of Illinois.

Wiedersum Associates news

Guy G. Rothenstein has been appointed to head the Housing and Hospital Division of Frederic P. Wiedersum Associates, New York and New Jersey architectural-engineering firm. Rothenstein is a designer for public and private housing, city planning, and commercial buildings.

Kapp wins Raymond award for paper on foundations

Martin S. Kapp has won the first annual Alfred A. Raymond Award of $1,000 for his paper describing a new technique of soil consolidation. The award is named after the founder of Raymond International, Inc., New York City. Kapp, a soils and foundation engineer for The Port of New York Authority, described a novel way to stabilize soil at New York's La-Guardia Airport.

By lowering the water table temporarily with wellpoints, a large area of unstable soil was consolidated. Lowering the ground water level eliminated soil buoyancy, with the result that an overlying sand blanket increased in weight and effectively compressed an underlying stratum of soft silt. This method was used instead of a conventional surcharge fill.

Western-Knapp promotes

Bengt Samuelson is now manager of the Hibbing, Minn., district of Western-Knapp Engineering Co., San Francisco, Calif. Since joining the firm five years ago, Samuelson has served as project manager in the home office, overseeing the engineering and construction of many large projects.

Ebasco names consultant

Richard M. Bush has been appointed a senior consultant on the Washington, D. C., staff of Ebasco Services Inc., New York City. Prior to joining the firm, Bush was with the U. S. Army Corps of Engineers for 16 years, serving in Washington as chief of its Power Branch since 1955.

Black named chairman of new CIMA council

Walter W. Black has been appointed chairman of the newly organized Service Management Council of the Construction Industry Manufacturers Association. Black is general service manager of the Construction Equipment Division, International Harvester Co., Melrose Park, Ill.

A calendar of coming conventions appears on page 74 of this issue.

Name your bearing needs...we'll meet 'em pronto from 30 types, 10,247 sizes

TIME and time again, machinery makers come to the Timken Company for help with some special bearing application problem. One they think hasn't been solved before. And time after time, from our 30 types and 10,247 sizes of Timken® tapered roller bearings, we've come up with the bearing design to do the job and at minimum cost.

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Earthwork at the site is handled by R. W. Construction Co., Denver, which uses an Allis-Chalmers HD-6 Tracto-Shovel to place backfill, and a Wayer Model J vibratory compactor to compact the lifts.

Work moves swiftly on

The Air Force Academy's physical education building

The good rate of work achieved on the physical education complex at the Air Force Academy near Colorado Springs would have been impossible without specialty subcontractors and the tricks used by each to get the job done fast.

With work in full swing this past year on various structures at the site, an average of 4,500 workmen turned out $5 million worth or more of completed construction per month. Several of the huge main buildings on the campus and many of the smaller ones are presently occupied by some 1,145 cadets, together with the staff and faculty.

The Cadet Physical Education complex, a huge structure with all facilities for indoor physical education, training, intramural and intercollegiate sports, leisure-time sports, and rifle and pistol training is among the major units being rushed to completion.

The $7 million contract for the building was awarded by the Air Force Academy Construction Agency to the T. C. Bateson Co., Dallas. Located at the north edge of the campus, the steel-framed structure is about 534 feet long, 226 feet wide, and 53 feet high. It contains approximately 411,000 square feet of floor area and more than 8 million cubic feet of space. A mezzanine area extends across the thirteen 28-foot bays on the south side of the building. Most of the rest of the first-floor space extends to the roof truss. In other areas, swimming pools, mechanical equipment, and other facilities are located below first-floor level.

Included in the structure are two swimming pools. One, with 1,500 fixed seats for spectators, will be used for intercollegiate swimming, diving, and water polo meets. The other is for intramural water activities. In addition to 12 basketball courts, the structure houses facilities for handball, squash, wrestling, boxing, and gymnastics, plus locker rooms and showers. There are also indoor pistol and small-bore rifle ranges.

Steel is separate contract

The building is founded on bell-bottom concrete caissons drilled with Williams rotary drills by a subcontractor, Johnson Drilling & Foundation Co., Dallas. The structural steel frame was furnished and erected under a $481,830.48 separate prime contract by Kansas City Structural Steel

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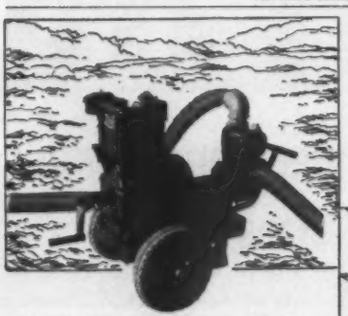
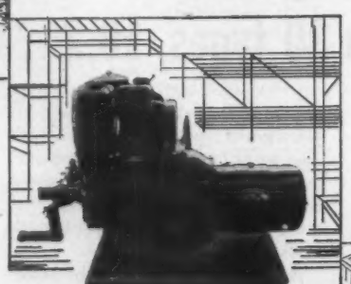


Carter "Humdinger" 3" pump with air-cooled Lister Diesel Model LD1



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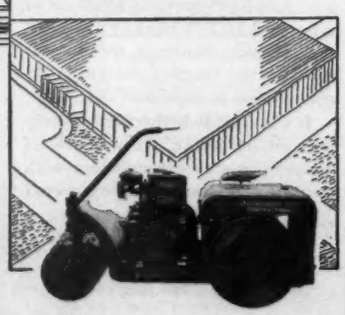

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D. L. "Don" Tedder, right, general superintendent for general contractor T. C. Bateson Co., makes a check on work progress with George H. Broussard, project manager for mechanical subcontractor Farwell Co., Inc.

Encasing steel columns in concrete was a tedious operation. The Bucyrus-Erie 22-B uses a 55-foot boom to get the Gar-Bro ¾-yard bucket to the funnel just under the roof trusses. A Smith 6-yard transit mixer on an International truck delivers the concrete.

Co., Kansas City, Kans. The steel columns and other exposed steel below the roof trusses are encased in concrete. Much of the interior construction is of reinforced concrete.

The exterior walls consist of 33,712 square feet of Georgia marble and aluminum facing backed with concrete-block masonry. There are 8,624 square feet of glass and aluminum and 16,632 square feet of aluminum louvers and trim. Three sides are marble with vertical aluminum louvers. The fourth, or south, side is aluminum, glass, and marble. The aluminum work was done by Cupples Products Corp., St. Louis, Mo.

Work actually got under way on the site in 1957 when building excavation was done. Crews were on the site almost continuously with a variety of equipment, including draglines, tractor shovels, and tamping equipment in addition to the scrapers. An Allis-Chalmers HD-6 Tracto-Shovel handled a lot of the backfilling, and a Wayer Model J vibratory compactor compacted much of the material, especially in tight spots where larger equipment could not operate.

Concrete construction

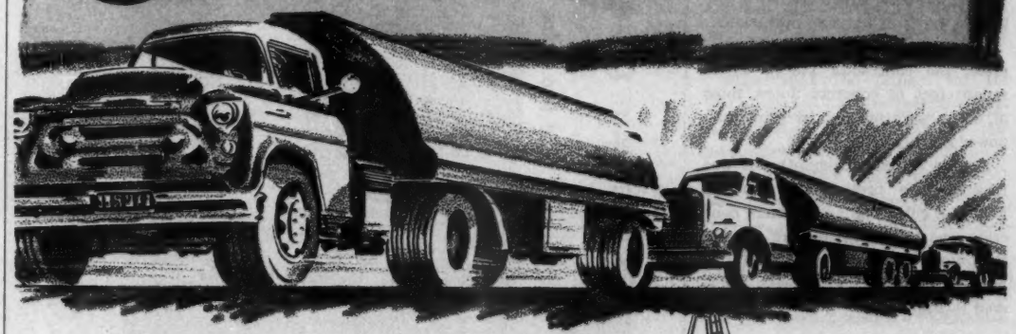
Basement walls, grade beams, and many of the interior walls and beams were formed with Waco form panels shored up, where necessary, on adjustable steel shores and 4 × 4 timber shores. Most of the 23,000 cubic yards of concrete that went into the structure was placed by Bucyrus-Erie 22-B cranes with Gar-Bro buckets or was chuted directly from transit mixers. The concrete was supplied by Concrete Materials, Inc., Colorado Springs.

One of the most difficult and troublesome concrete placement operations was the encasement of the steel columns. Forms for the relatively small columns were fabricated of wood panels and tied with Roos column clamps. A projecting funnel was built on one side at the top of each column form to provide enough room to introduce the concrete into the column. At best, it was a slow process, getting the concrete into the form and vibrating it enough with Viber vibrators to work the mix down around the column and the reinforcing steel cage.

On the top section of the high interior columns, the concrete was placed under the roof trusses, more

(*Continued on next page*)

CALWELD DIGS A HOLE BIG ENOUGH TO BURY 3 TANK-TRAILER RIGS!



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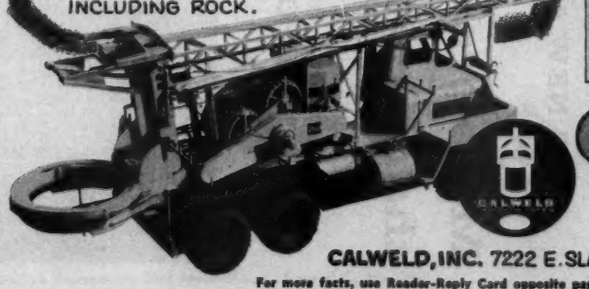

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An E-Z Lift conveyor brings concrete blocks to a subcontractor's men building the exterior masonry walls. The Whiteman Power Buggy, right, is delivering a load of mortar, which will be raised in buckets riding the conveyor.

through a tunnel to a converter in the physical education building, and then to 54 separate heating and ventilating units. Of these, 34 are located in the truss space at the top of the building. These heavy units were brought into the building on trucks and hoisted straight up into place with chain hoists.

One troublesome operation for the mechanical contractor was the placement of the six big swimming-pool filter tanks. These 7-ton tanks are 8 feet in diameter and 25 feet long. They had to be skidded into a room in which there was practically no headroom for lifting. A Caterpillar side-boom tractor brought them in part way, and they were winched into position on skids.

Farwell subbed the outside utilities to J. S. Brown-E. F. Olds Plumbing & Heating Corp., Dallas. Trenching for much of the water and sewer work was done with a Fordson Major diesel tractor equipped with a Sherman Major hydraulic backhoe. The pipe was handled by an Austin-Western crane. Both the Austin-Western crane and the Fordson carried front dozer blades that were used for backfilling the trenches.

Some idea of the magnitude of the mechanical work can be gained from a few of the quantities. There are nearly 50,000 linear feet of steel and wrought-iron pipe, 20 tons of pipe hangers, and 15,000 linear feet of type L hard copper tubing, just to name a few items. For radiant heating around the swimming pools, the contract calls for the placing of 10,000

(Continued from preceding page)

than 50 feet above the basement floor level, by a Bucyrus-Erie 22-B crane. Using a 55-foot boom, it lifted Gar-Bro ¾-yard buckets to the workmen at the top, and they worked it down into the funnels leading into the columns.

In addition to the 22-B, Bateson had a Byers motor crane and a Unit ¾-yard crawler, which shared in the several types of hoisting operations.

In addition to the structural concrete, the contractor placed 80,000 square feet of concrete floors, most of which were finished by Whiteman power finishers.

During the winter months, it was necessary to protect the concrete from the cold. The areas where concrete was being placed were covered with tarps and heated with Master heaters. Heated concrete was delivered to the job.

Big mechanical contract

A major item of the work was the $1.6 million mechanical subcontract handled by Farwell Co., Inc., Dallas. The contract covered heating, ventilating, plumbing, swimming-pool equipment, and many minor items.

High-temperature hot water from a central heating plant is piped

Using a Sasgen hand winch, a workman on the roof raises aluminum column covers into place. Workmen on a scaffold will make the attachment.

Here's news worth swinging around to see...

THE NEW ALLIS-CHALMERS TS-260

More profit capacity for you than anything near its size!

230 HORSEPOWER • 17 YARDS HEAPED

For two years, the TS-260 has been the hottest motor scraper in the business . . . and now it's even better. If you're looking for new ways to boost net profit on your earthwork, we invite you to check these facts . . . then compare the new TS-260, dollar for dollar, with *any other make*. And since words don't really prove a thing, we hope you'll compare *on the job*.

linear feet of 1-inch copper tubing. Farwell designed and built its own machine for making the U-bends in this type K hard copper tubing.

To provide access to the heating and ventilating units in the roof area, the contractor placed almost a mile and a half of steel-grating catwalks. This work, included in a subcontract for miscellaneous iron, was done by Southeast Ornamental Iron Works, Kansas City, Mo.

Masonry walls

B. D. Harper & Sons, Wichita, Kans., subbed the masonry work, which included the construction of the backing for most of the exterior walls. Harper mixed the mortar in Jaeger mortar mixers at two locations outside the building, and delivered it to the crews with a Whiteman Power Buggy. Blocks and other materials were also delivered from stockpiles to crews by Power Buggies or fork trucks.

When the workmen got up off the ground on scaffolds, the mortar and blocks were raised up to them by an E-Z Lift conveyor elevator of the chain-and-flight type. The mortar was handled in buckets that were attached to the flights.

While the weather is generally favorable in this area, gusts of wind with velocities of 50 to 60 mph sometimes struck without warning, endangering workmen and materials. All supervisory personnel kept an eye open for signs of these gusts and tried to keep the materials in safe locations.

Some of the other major subcontractors on the project were Howard P. Foley Co., Salt Lake City, electrical; Dallas Steel Contracting Co., reinforcing-steel placement; Ceco Steel Products Corp., Houston, Texas, furnishing and erection of steel pans for floor forms; Federal Cement Tile Co., Chicago, precast-concrete roof decking; Otis Elevator Co., Denver, elevators; Earl W. Hamman Co., Wichita, Kans., glazing, resilient floors, etc.; Connor Sheet Metal & Roofing Co., Oklahoma City, membrane waterproofing, insulation, and roofing; and Steel Sash Service, Inc., Chicago, metal-curtain-wall erection.

Outside utility work, also subbed, included trenching and laying water pipe. An Austin-Western lowers a section of the cast-iron pipe into a trench. The rig has a front dozer, which is used for backfilling trenches.

Personnel

Supervising the project for the T. C. Bateson Co. was general superintendant D. L. "Don" Tedder. Assistant superintendent was John W. Ivey, and office engineer was Bob Bond. The project manager for Farwell Co., Inc., on the mechanical subcontract was George H. Broussard.

All construction on the Air Force Academy is under the supervision of the Air Force Academy Construction Agency, of which Col. Albert E. Stoltz is director and John P. Huebsch, deputy director. The agency is represented by Col. J. A. Barnett, chief, Operations Division; A. J. Raiche, deputy chief, Operations Division; Lt. Col. R. J. Coffee, area engineer; and Lts. E. G. Schwiebert, Jr., and N. H. Knox, construction engineers.

The architect-engineer for the entire project is the Chicago firm of Skidmore, Owings & Merrill. Edward A. Merrill is director of engineering for the firm, and Carroll Tyler is general manager of the Air Force Academy project. THE END

Ceco offers new calendar to construction industry

A 1959 calendar, designed for architects, engineers, contractors, and others in the construction industry, is being distributed by Ceco Steel Products Corp. Suitable for wall or desk, the copyrighted calendar provides large spaces for daily memoranda. Each page shows for full weeks, successive weeks being shown without interruption at the beginning and end of a month.

Free copies of the calendar may be obtained, while the supply lasts, from the company, 5601 W. 26th St., Chicago 50, Ill.

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Two inverted umbrellas show the basic construction of the hyperbolic paraboloid roof of Hunter College library in the Bronx, New York City. In the umbrella at right, all reinforcing steel for the concrete has been set. A crane swings a 700-pound steel welded-wire-fabric mat onto the framework of the other shell.

Work time cut by two-thirds for concrete operation on hyperbolic paraboloid roof

In half a day's work on the Hunter College library in the Bronx in New York City, a crew of four did a job that would ordinarily take a day and a half. This high production per hour was achieved on a continuing operation—reinforcing work on hyperbolic paraboloid shapes for the roof.

The library and accompanying classroom structure called for six inverted umbrellas of thin concrete to roof the glass-enclosed library. Each umbrella, 60×60 feet square supported by its central column, consists of four hyperbolic paraboloid quadrants. The six inside-out umbrellas are joined at the edges to form a 120×180-foot roof.

General contractor Leon D. De Matteis & Sons, Inc., Elmont, N. Y., sublet the concrete work for the $3,300,000 project to Dic Concrete Corp., also of Elmont. The subcontract included forming, steel placement, and concreting.

Reinforcing work

Each umbrella called for 4.2 tons of reinforcing fabric for the membrane, or just over a ton to a quadrant. The fabric was supplied to the job in 31-foot-long 10½-foot-wide mats, three mats being placed to a quadrant. The placement of 12 mats for the complete umbrella, including the positioning of 1-inch supporting chairs under the mats, was done by the 4-man lather crew in half a day. A similar tonnage of individual reinforcing members placed by the same crew probably would have required at least a day and a half.

The 700-pound 31-foot-long mats were handled by a crane, which hoisted one mat at a time from the stockpile and, guided by the lather crew, eased it into place. The mats overlapped at least two wire spacings, or 1 foot, and nested so that there were only three thicknesses of wire at the lap. With 1-inch chairs under the mats, this afforded the reinforcement at least a 1-inch cover of concrete, top and bottom. The structural thin shell is 3½ inches thick.

In order to permit nesting at the

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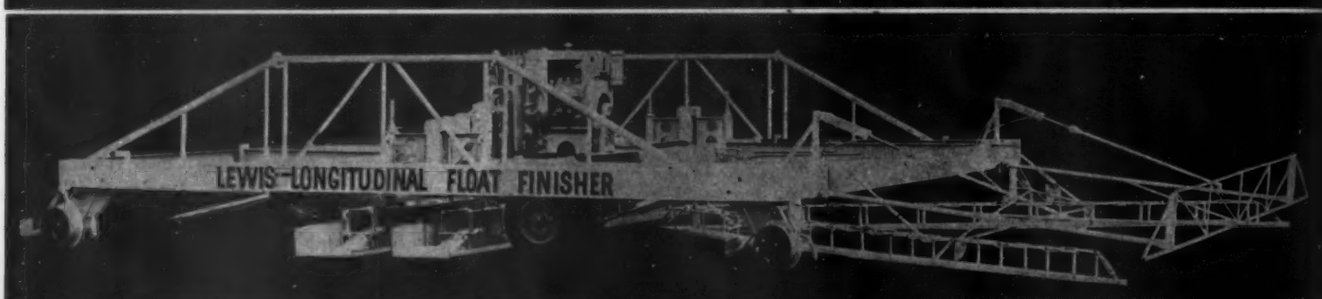

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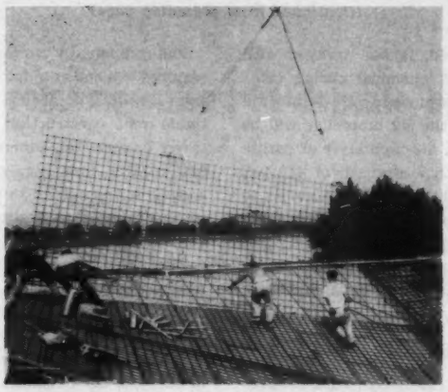


A 31-foot-long 10½-foot-wide reinforcing mat, the final one for this shell, is guided into position. It will be lapped and nested over the adjoining mat.

overlaps, crews had to place the mats as nearly parallel with each other as possible. They then tied the mats securely at intervals for continuity of reinforcement. Tying was started at the center of the umbrella, and crews worked out to eliminate bulging. At the edges, excess fabric was trimmed.

After the 12 welded-wire-fabric mats were laid and tied for each umbrella, the lather crew placed reinforcing bars for the stiffener ribs that divide the umbrella into quadrants, and for the tension edges or perimeter of the umbrella. The tension-edge steel counteracts the tendency of the umbrella edge to droop. Tension is 100 per cent at the intersection of the umbrella and the rib, and falls to zero at the corner of the umbrella.

The theory of umbrella design is that the roof loads are transmitted from the thin-shell reinforced-concrete membrane to the stiffener ribs by shear, and carried down the ribs by compression to the central supporting column. Each umbrella is self-supporting; there is no structural tie between the six shapes. However, for the continuity of the library ceiling, adjoining roof slabs of the umbrellas were key-locked and tied by No. 3 dowels at the center of shared umbrella edge.

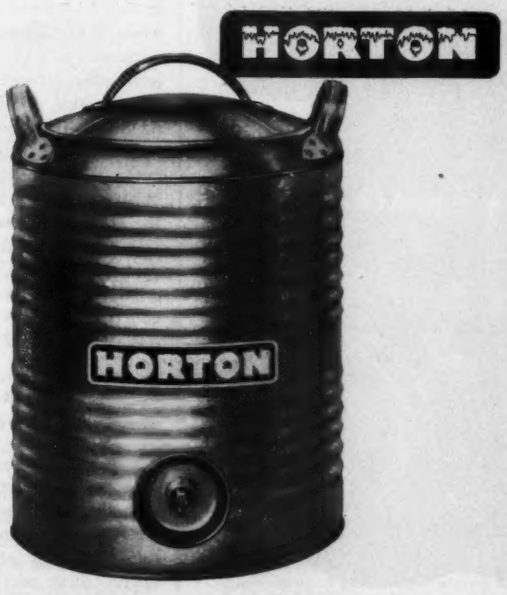
Placing concrete

Concrete placement for each umbrella usually took a full working day. The special lightweight mix was chuted from the ready-mix truck into a ½-yard bucket and hoisted by crane to the umbrella top, where finishers and workers guided it into place. Each umbrella required about 60 yards of concrete for the 3½-inch-thick compoundly curved slab. A greater amount of concrete was placed for the stiffener ribs and at the juncture with the central supporting column.

The concrete was placed from the top, or tension edge, and worked down toward the center, vibrated, and rough-screeded. The concrete had to meet a 2-inch slump test and develop a strength of 3,500 psi in 28 days.

Parallel sealed gaps, left between sheets of the plywood forms to make ribs on the under, or ceiling, side of the hyperbolic paraboloid surfaces, were grouted by hand prior to concrete placement in order to eliminate voids.

As soon as an area of the concrete roof slab was rough-screeded and



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(Continued from preceding page)

A ½-yard bucket of lightweight concrete is dumped onto the roof form. The concrete is rough-screeded and rough-finished to a 3½-inch depth, while a workman vibrates the mix.

rough-finished, it was sprayed with TMC No. 10 chemical curing compound. The structural wire-reinforced concrete of the six umbrellas will be covered with a 3-inch layer of perlite concrete with a strength of 440 psi, but equivalent in insulation ability to over 30 inches of ordinary concrete. Mineral-surface roll roofing will cover the perlite and will be placed in alternating stripes of light and dark gray.

Time, money savings

The use of the hyperbolic paraboloid shape resulted in great time and money savings for both the contractor and the owner, the New York Board of Higher Education.

The compoundly curved roof shape required less concrete for a given area than is ordinarily needed for conventional roof construction. Labor was saved because the concrete roof did not require finishing; only rough-screeding was needed to help bond it to the topping of perlite insulating concrete.

The 24 hyperbolic paraboloids, which actually consist of straight lines, were formed from stock lumber. The prefabricated mats of heavy welded-wire fabric for reinforcement of the thin-shell membranes cost less than other reinforcement, such as individually placed bars, and up to six days of construction time were saved. Speedy placement of the fabric mats saved at least a day between operations. This also permitted concrete placing to begin sooner than anticipated, and eliminated waits and idle equipment. THE END

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4-cycle
Short-stroke
Air-cooled

MODEL
K160

- Balanced crankshaft— ball bearings at both ends.
- Externally mounted breaker points.
- Positive splash lubrication.
- Cylinder and crankcase are made of metallurgically controlled close grained cylinder iron.
- Mechanical governor for accurate R.P.M. control

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Kohler engines are conservatively rated, quick-starting, reliable.

Experienced application engineers are ready to help you choose the engine that will do the job.

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Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

For more facts, use Reader-Reply Card opposite page 18 and circle No. 294

Pavement slipperiness topic of HRB bulletin

New methods for measuring rubber-tire resistance to slipping on pavement surfacing materials are presented in "Pavement Slipperiness Factors and Their Measurement", Bulletin 186 from the Highway Research Board.

Six of the reports describe how and to what extent the skidding of locked wheels was influenced by different compositions and conditions of the pavements. Another paper covers the development of equipment and a method for determining, by pretesting, the potential slipperiness of various road surfaces. An eighth paper gives results of the tests made to show the polishing characteristics of certain kinds of aggregates commonly used in pavements.

Priced at $1.60, the bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Engineer from Jordan studies highway system

Munjed W. Murad, a mechanical engineer of Amman, Jordan, has begun a 3-month study of equipment and management in the Pennsylvania Department of Highways. An 11-month study course in the United States was arranged for him by the International Cooperation Administration through the Bureau of Public Roads.

In Pennsylvania, Murad is undergoing training required for a supply engineer for a large equipment organization. He is employed in Jordan as a supervising, maintaining, and field engineer for public works.

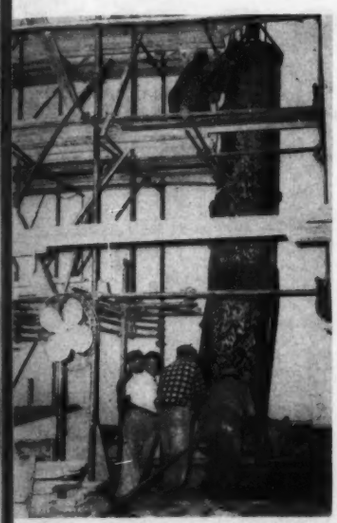
ARBA gets new affiliate

The Kentucky Road Builders Association has become the latest addition to the state affiliates of the American Road Builders' Association. W. O. Snyder, executive secretary of the new affiliate, holds the same position with the Kentucky Association of Highway Contractors.

Large columns raised in delicate operation

Two of the largest monolithic marble columns ever placed in the New York metropolitan area were hoisted into position, during November, in a delicate operation that required absolute precision. A column stands on each side of the altar of the Catholic Church of Our Saviour, located at 38th Street and Park Avenue, and being built by Vermilya-Brown Co., Inc., New York City.

The red Languedoc marble columns, each measuring 17 feet long, 2 feet 3 inches in diameter, and weighing about 6 tons, were quarried in southern France. Positioning of the columns on previously placed marble pedestals was made extremely delicate because of the design of the column bases. It called for a fillet and scotia. This means that the base is flared out a few inches wider than the column diameter. If the weight of the column was ever supported by the fillet during any phase of erection, a piece probably would have been broken off.



In the restricted area near the altar of the Church of Our Saviour in New York City, crews work with precision to raise one of the red Languedoc marble columns into position. Here, it is two-thirds of the way up; the lift is made with a 4-ton and a 2-ton block-and-fall setup.

Since the church was completely enclosed, making the use of a crane impossible, the contractor used a block-and-fall system to hoist and raise the columns from the horizontal position and lower them vertically onto the pedestals. A 4-ton block and fall, attached to an exposed steel ceiling beam, was used together with a 2-ton block and fall. The operation for both columns was identical; about one day was required to set a column.

The first crated column was rolled through a maze of scaffolding being used by ceiling painters to a location near the pedestal. The column was uncrated and placed on the floor with its top pointed at the pedestal. Holes for two eyebolts were then drilled into the top of the column to form a V. The bottom end was placed on an 8-wheel cradle which was well padded to protect the fillet. A heavy rope, wound around the neck of the column and at two other places further down, was connected to the 4-ton block and fall while the 2-ton block and fall was connected to the two eyebolts.

A tag line, attached to the bottom of the column, controlled the movement of the cradle, which inched toward the pedestal as the column was raised higher and higher. A 2-foot-diameter dowel pin, formed at the bottom of each column, had to be perfectly plumb to accurately fit into the pedestal socket. A lead gasket or washer was placed between the pedestal and bottom of each column. This consisted of two sheets of lead totaling ⅛ inch in thickness. Its diameter was only 2 inches less than the diameter of the column. Since the flared fillet overlaps the gasket by 2 inches, no strain is on the fillet.

The Frank Scolaro Marble Co., New York, N. Y., is the subcontractor for the marble work in the church. Paul C. Reilly, a specialist in ecclesiastical design, is the architect. THE END

Using a block and fall connected to an exposed ceiling beam, the marble subcontractor crew places a column pedestal that will support the 17-foot column.

How YOU- can benefit from-

50 YEARS OF WISCONSIN ENGINE PROGRESS 1909 · 1959

This year of 1959 is the Golden Anniversary of Wisconsin Engines. It heralds 50 years of continuous engine progress. Fifty years of engineering development and exclusive specialization in the design and manufacture of engines.

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- Originally manufactured in a power range up to 200 hp., Wisconsin Engines helped to make automotive history as well as supplying dependable power for many industrial applications — service that called for the most advanced engineering.
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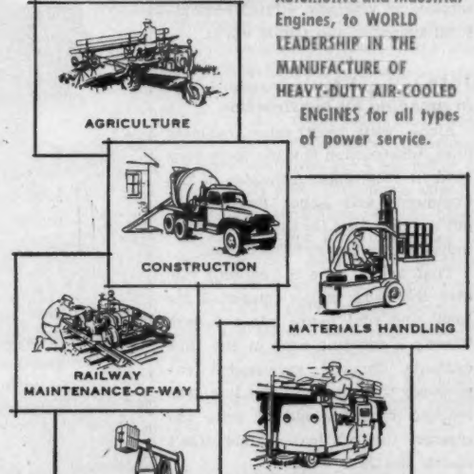
- Today the Wisconsin line comprises the most complete line of Heavy-Duty Air-Cooled Engines in the industry. They are supplied in 4-cycle single cylinder, 2-cylinder and V-type 4-cylinder models in a complete power range from 3 to 56 hp. There is a Wisconsin Engine of the right size and type to fit the job and the machine.
- Every Wisconsin Air-Cooled Engine is designed for heavy-duty service under all climatic conditions from low sub-zero to 140° F. You get the *Most Engine* for your money for MOST HP. HOURS of service.
- For 1959 Wisconsin has available a complete line of factory-built LPG Engines (including conversion kits for field installation on Wisconsin gasoline engines). In addition, we offer a new line of heavy-duty, quality-built Vertical Shaft Engines, from 3 to 7 hp.
- More than 2000 convenient Wisconsin Authorized Service Stations stand ready to provide expert servicing and factory-built parts for all Wisconsin Engines.

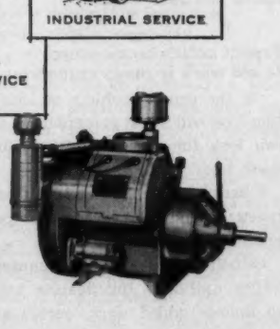
Constructive experience is a priceless asset. The benefits to the manufacturer, distributor and user of power equipment are many. You are best served in all respects when you specify "WISCONSIN ENGINES"... *for better service, low-cost maintenance, trouble-free operation and long engine life.* Write for engine bulletin S-237.



from water-cooled Automotive and Industrial Engines, to WORLD LEADERSHIP IN THE MANUFACTURE OF HEAVY-DUTY AIR-COOLED ENGINES for all types of power service.

This 1914 Stutz Bearcat, one of the most famous and rugged cars of its day, was powered by a Wisconsin Heavy-Duty Water-Cooled Engine . . . a power leader of high recognition even at that early date.

This FWD Wisconsin-powered truck, known as "No. 28," was purchased in 1921 from Army Surplus, and after many years of service is now on display at the Halliburton Oil Cementing Co., in Oklahoma.



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For more facts, use Reader-Reply Card opposite page 18 and circle No. 295

Surveying washington

by E. E. HALMOS, JR.

Big budget due this month; to give idea of federal works

The federal budget is one of two big things for construction men to watch, as members of the heavily Democratic 86th Congress get settled into their chairs in Washington this month.

Fact is that the federal budget is going to have to be another whopper. The budget for the current fiscal year is more than $79.2 billion, the biggest peacetime budget ever. President Eisenhower is reportedly making an effort to pare this down to around $78 billion. And cuts will have to come in areas outside the defense department; the clamor for new weapons won't permit much—if any—cutting on the $41 billion currently assigned to defense. Any tries at cutting would seem most likely in such services as veterans' affairs, agricultural supports, and public works.

1959 to reach for new record in spending for construction

Along with most other business lines, construction is going to be very good in 1959. Joint estimates of the Commerce and Labor departments put the 1959 total for the construction industry at a record $52.3 billion.

That would be a 7 per cent rise over the $48.8 billion estimated for 1958—and that figure was a record. There's a sobering note in the 1958 estimate, though: government experts say that the big dollar total was reached with the aid of price increases; the physical volume didn't match the 1955 level.

Expect action on measures to aid work in many categories

On the general subject of legislation that will affect construction, you can look for renewed efforts along these lines:

Extension of public-housing, urban-renewal, and slum-clearance programs.

Self-financing for the Tennessee Valley Authority (by floating bonds to finance added work, particularly steam plants).

Federal aid for redevelopment of local areas.

Some kind of overhaul of tax laws, to try to close loopholes about which many congressmen have been complaining. If deficit financing must go on, congressmen want to be able to tell constituents that it is making business pay its fair share.

Creation of a "Columbia River Valley Authority".

Authorization for added rivers-and-harbors work.

Alaska set to lead country to new construction boom

Alaska's entry into the Union as the 49th state is bringing some bright gleams into the eyes of the Bureau of Reclamation, among other federal agencies that have to do with construction.

Something like 93 per cent of the new state's huge land area is federally owned. And without question, there's going to have to be a lot of work done to make parts of the state habitable and capable of producing livelihoods for both present and future citizens. Enormous sources of water power await development. Roads must be built, other transportation and communications systems put into service. Irrigation will be a factor.

Reclamation, confined by law to the western states, has long been casting about for areas to use its unquestioned know-how and trained forces. In Alaska, that wouldn't require new legislation, since most of the work would be on government-owned land.

For contractors there'll be much more work—on roads, communications, and the like. Defense work also may be stepped up. Alaska's new status as a state would make it an entirely different matter if an enemy managed to get a foothold there: he would have, in fact, a foothold on the United States itself.

Strong drive seen on Congress to get labor laws modified

Labor, along with the budget, will get plenty of attention from this Congress. Labor feels it is in the saddle, and it will drive hard to achieve modification of labor laws it has long considered restrictive or anti-labor.

Consider: In the House, there are

Can you imagine a mor
to load...unloa

Construction equipment gets bigger, harder to load and certainly more costly. So what better reasons are there to choose the fast, safe and simple front-end loading and unloading provided by LaCrosse Removable Gooseneck Trailers.

First, consider LaCrosse Removable Gooseneck design: both ends of the gooseneck have standard kingpin and fifth wheel hook-up . . . fool-proof, positive locking so familiar to everyone. This design—without the use of winch, power or hydraulic attachments—permits loading and unloading to be accomplished in the three safe and simple steps illustrated below.

Important, too, running gear and brakes on these Removable Gooseneck Trailers are LaCrosse designed, engineered and manufactured . . . your assurance of generous overload strength and support. Units available with capacities of from 25 to 75 tons payload. Options of flat deck, drop side deck or beam deck design. Two and three axle models. Get the full facts from your LaCrosse Dealer or write for the brand new brochure No. RG-2560.

1 Release tractor kingpin connection and pull away; trailer gently lowers to the ground.

2 Swing hinged stirrups on gooseneck to up position and back up tractor till upper kingpin locks in tractor's fifth wheel.

3 Release lower kingpin from trailer fifth wh and tractor pulls away with gooseneck. simple as 1-2-3!

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71 freshmen congressmen (52 Democrats, 19 Republicans); the Senate has 14 new members—all Democrats. And Labor takes credit for electing most of them. There's no question a lot of the new congressmen agree.

Result will be strong labor drives for these objectives:

- Overhaul of the Taft-Hartley Act, particularly of the loophole that has permitted 19 states to pass right-to-work laws that bar the union shop. (The strong tide against such laws showed clearly in the November 4 elections, when only one state, Kansas, approved such a law, and four others voted them down—along with their proponents.)
- Extension of minimum wage, boosting the "floor" by another 25 per cent.
- Extensive federal aid for education. (In this, Labor would revive a measure introduced in the last Congress that would provide for federal payments up to $25 per pupil, to be used for construction and for teachers' salaries.)
- Tax cuts for lower and middle-income groups, and tax exemption for payments to federal retirement systems.
- Broader—and higher—unemployment pay.

Labor will go along with one restrictive kind of law, however. That will be some kind of federal guarantee against racketeering within labor itself. Responsible leaders have been as shocked as anyone else at some of the disclosures of the McClellan committee in recent months.

Voters' okay on school building to expand work in that field

Buried under the purely political results of the November 4 election was a matter of vast interest to the construction industry:

Voters approved a total of $373.1 million worth of bonds for school construction. It is significant that this was 82.8 per cent of the total money value of all bond proposals presented at the elections. It represented approval of 123 out of 171 proposals.

Thus it is obvious that voters are continuing to support new construction for educational purposes by an overwhelming majority, and at record amounts.

Just how big this trend has been, for construction, can be read from these figures, prepared by the U. S. Chamber of Commerce:

The supply of U. S. classrooms increased from 700,000 to 1,200,000 in the last 11 years. More than 25 per cent of all classrooms now in use were built in the last 5 years; more than 40 per cent in the last 10 years.

Space program opening new field for contractors

Don't overlook missiles as a field for construction work.

A recent survey by a top missile magazine places the total business this year at $6.5 billion. And of that, at least $1 billion goes for service work—including a lot of construction.

The thing to remember is that you don't fire one of the big ones, like Atlas or Thor, from just any place. You have to have a pretty elaborate launching complex, including a lot of concrete for the launching pads and blockhouses. And there must be roads and machinery to haul the giant birds and the supplies they need. The really big ones like Atlas need large crews to keep them in ready condition—as many as 500 men per shift for a permanent base. And they require mess halls and other service facilities. As long as the biggest missiles depend on liquid fuels, they'll require huge storage areas, pipelines. Some of the missiles themselves are housed in movable shelters until ready to fire.

There are some interesting sidelights, too: Right now, furniture-moving companies are a big factor in the missile field. They move most of the biggest birds from place to place, relying on their long experience in handling the housewife's precious china and bric-a-brac. These companies move right into the plants to pack the missiles and haul them directly to their destination.

Construction men have a lot of experience moving big things gently, too.

Driver education increases road-carrying capacity

A 7-day driver-education test on Virginia's Shirley Highway, a main route to suburban areas west and south of Washington, points the way to a more efficient use of roads.

During morning rush hours, the most congested section of the highway had carried between 3,200 and 3,600 vehicles per hour. During the BPR-conducted test, capacity was increased to 4,100 vehicles per hour.

Devices used included "Don't Change Lane" signs and temporary channel markers at some intersections—along with strict enforcement—to educate drivers as to which lanes to use for fastest travel. After the test, capacity dropped back to between 3,600 and 3,800 vehicles per hour—but still well above previous figures.

Safe and Simple way and transport?

Hinged stirrups on Gooseneck rotate downwards over heavy-duty carrying pins; in combination with trailer fifth wheel, provides positive locking in stationary or transport positions.

Trailer fifth wheel is standard ASME code type that locks to lower Gooseneck kingpin. This simple design eliminates gadgets which complicate removal procedures as well as adding extra weight and cost.

For hard-to-load or "dead" weight machines, ramp is easily placed. Note, too, side brackets; these brackets on both sides of trailer allow 24 inches additional width.

THER LACROSSE TRAILERS

8-10 TONS | 8-15 TONS | 13-20 TONS | 20-40 TONS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 296

Names in the news

Kelly named manager of Missouri AGC

James W. Kelly, former administrative assistant to Missouri's Governor James T. Blair, Jr., is the new manager of the Associated General Contractors of Missouri. Kelly has been executive aide in the Office of Defense Mobilization; executive officer of the Kansas City District of the U. S. Army Corps of Engineers; and administrative assistant to the director of public works for Kansas City, Mo.

Paul I. Byrne is assistant manager of the organization. He was previously public relations director of the Missouri Public Expenditure Survey, a privately supported governmental research organization.

Col. Troxler directs construction in Bermuda

Col. Paul D. Troxler, district engineer for the U. S. Army Corps of Engineers at Jacksonville, Fla., is now responsible for military construction at Kindley Air Force Base, Bermuda. This was formerly handled by Col. Carlin H. Whitesell, district engineer for the Eastern Ocean District.

Facilities costing $13.5 million are being constructed at the air base, which is also used by commercial air lines entering Bermuda.

Benjamin Gray, new general partner of De Leuw, Cather & Brill.

De Leuw, Cather & Brill appoints general partner

Benjamin Gray has become a general partner of De Leuw, Cather & Brill, architects and engineers of New York City. Gray, a member of the Society of American Military Engineers, was previously chief architect with Burns & Roe, Inc., also of New York City. He has designed many power plants both here and abroad.

Educators visit India; plan engineering school

Six experts in engineering teaching will return from India early this month after studying plans for a new engineering school at Kanpur. Named for the job by the American Society for Engineering Education are Emeritus Professor Deane G. Carter, Nathan W. Dougherty, Professor John C. Georgian, Emeritus Professor Whitney C. Huntington, Dr. William W. Stirton, Emeritus Professor Royal W. Sorensen, and Leslie Mayberry.

Upon their return to this country, members of the team will collaborate with expert consultants on specific plans for buildings, laboratories, budgets, and operation at the proposed school. Financial assistance from the U. S. International Cooperation Administration for the new school will be based at least in part upon these plans and recommendations.

The men, under the auspices of I. C. A., visited universities, colleges, and industrial plants in ten Indian cities. Their task was undertaken at the request of the Indian Ministry of Scientific Research and Cultural Affairs.

Webb & Knapp acquires Industrial Engineering

Webb & Knapp, Inc., New York, N. Y., has acquired Industrial Engineering Co., of the same city. Industrial Engineering, a general contracting and building firm specializing in reinforced-concrete construction, will operate as an autonomous subsidiary of Webb & Knapp, and will continue to be a general building contractor as well as a contractor for the parent company's projects.

David Moss has been elected president of Industrial Engineering, and William Travis Miller is chairman of the board.

Scientific Design news

Thomas G. Gillespie, Jr., has been appointed vice president in charge of legal and contract matters for Scientific Design Co. Inc., New York City. He will also be in charge of other development activities for the firm, which engineers and builds organic and petrochemical plants in this country and abroad.

Stone & Webster appoints engineering manager

Donald F. Wishart is now engineering manager of Stone & Webster Engineering N. V., the Netherlands subsidiary of Stone & Webster Engineering Corp., Boston, Mass. A member of the firm since 1926, Wishart was previously chief project engineer of the Chemical Division, supervising projects both here and abroad.

Thomas A. Fearnside, the firm's chief mechanical engineer, has been elected a fellow of the American Society of Mechanical Engineers. This honor is conferred upon members who have rendered distinguished service to the engineering profession.

THE FASTEST CUTTING CONCRETE SAW BUILT!

The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

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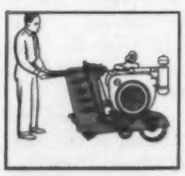
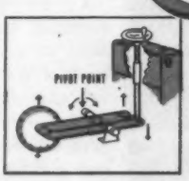
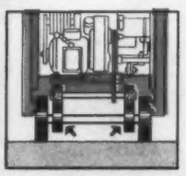


Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!

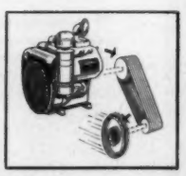


Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed... which gives you positive control of the blade at all times ... and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method... not even hydraulic ... gives such complete blade protection.

We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curing compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

ONLY CLIPPER CONCRETE SAWS ARE... Unconditionally Guaranteed TO CUT FASTER— HANDLE EASIER and GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!

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For more facts, use Reader-Reply Card opposite page 16 and circle No. 297

Curtain-wall construction analyzed in new book

The problems and potentialities of curtain-wall construction are discussed in "The Contemporary Curtain Wall: Its Design, Fabrication, and Erection", by William Dudley Hunt, Jr. The walls, their functions and malfunctions, component parts, materials, and installation are analyzed and evaluated.

Pitfalls are pointed out, known solutions outlined, and accepted good practice specified. Tables and lists give all known data about insulating efficiency, fire resistance, dimensional stability, and the like. Drawings present many construction details, and photographs show good examples of curtain walls in commercial buildings, schools, stores, factories, etc.

The 462-page book may be purchased for $12.75 from the publisher, F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.

Salt as a de-icing agent discussed in booklet

Thirty-eight state highway departments and a great many of the major cities in the nation's snow belt use salt in ice and snow removal, according to a handbook, "Salt for Ice and Snow Removal", compiled by the Salt Institute. The booklet contains data on salt's de-icing properties, the nature of corrosion, disadvantages of abrasives, de-icing chemicals in general, and the effect of de-icing chemicals on concrete.

Copies of the booklet are available on request from the institute, 33 N. La Salle St., Chicago 2, Ill.

HRB issues proceedings, list of publications

The Highway Research Board has issued "Proceedings", Vol. 37, of its 37th annual meeting, held last January 6 to 10; and "Publications", a free pamphlet listing bulletins published by the HRB.

"Proceedings" contains a number of papers on economics, finance, and administration; design; materials and construction; maintenance; traffic and operations; and soils, geology, and foundations. Awards, minutes of the 1958 business meeting, and an author index conclude the book. The book is priced at $10.

"Publications" lists all bulletins, reports, bibliographies, and other publications put out by the HRB. Each publication has been listed twice, by subject and by series.

Both the book and pamphlet are available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Leap Associate meeting

The first annual Leap Associate conference on prestressed concrete will be held January 19 and 20 at the New Florida Hotel, Lakeland, Fla. Most of the 42 Leap Associate producers of prestressed concrete will take part in the group discussions, panels, and demonstrations covering the latest advances in the industry.

Revised edition covers entire sewage project

An eighth revised edition of "Sewerage and Sewage Treatment", by Harold E. Babbitt and E. Robert Baumann, is available for $10.75 from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. The book covers the sewage project from inception through public relations to design, construction, operation, and maintenance.

Diagrams, charts, and pictures round out the 790-page book.

AWS information center

An information center has been established by the American Welding Society, 33 W. 39th St., New York, N. Y., to act as an authoritative source for welding news and information.

The service will be available to both the press and industry.

Luria Engineering builds branch office for Case

Construction work is right on schedule for a new building in Syracuse, N. Y., for the J. I. Case Co., Racine, Wis. The Luria Engineering Co., of New York, N. Y., and Bethlehem, Pa., designed the building and is general contractor for the project.

The 80,000-square-foot structure, to serve as a warehouse, a parts department, and an office building, is on Ridings Road, near the New York State Thruway.

"Turnkey" service by joint-venture firm

Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y., civil engineering consultants, and Coates Field Service, Inc., Oklahoma City, Okla., right-of-way specialists, have formed a new service to provide complete engineering and land-acquisition facilities for the pipeline and electric-transmission industries. The two firms will retain their identities, but will function as a joint venture on any specific project.

The service includes aerial surveys and mapping, route and site study, seismic subsurface investigations, location studies, design, appraisals, title searches, land acquisition, construction supervision, and damage settlements.

Give Your Profits a Lift!

Bring NOWness to Your Operations ...with ASSOCIATES Equipment Financing

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NOW ... make necessary additions and replacements without suddenly draining vital working funds.

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NOW ... enjoy greater operating efficiency; reduce maintenance and operating costs by updating and upgrading equipment.

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"Money to Grow On" is a new forty page book which explains the "mechanics" of equipment financing, fixed asset loans, advances for special situations and other Associates financing services.

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☐ Please send information on Associates financing:
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Title_____ Company Name_____
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City_____ State_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 298

$1,000,000 RECONSTRUCTION JOB

Saves New York City Vehicular and Transit System Bridge

River Water Seepage Problem Solved With Marlow Pumps®

The Roosevelt Avenue Bridge, over the Flushing River in Flushing, New York, carries trains of the city's transit system, as well as heavy highway traffic. Recently, it was noticed that the structure was sinking, endangering both highway and train travel. To correct this, a contract was issued by the Department of Public Works of the City of New York to the Woodcrest Construction Company for the reconstruction of the West approach to the bridge.

When the two-decked structure was originally built, it used wood piles sunk 70 feet below grade. As the ground on the site is mostly filled with fly-ash from incinerators, new steel piles were driven to between 100 and 120 feet below grade to properly support the new bridge abutments.

Seepage from the nearby river became a very serious problem when digging excavations for the abutments. In addition, the abrasive nature of the fly-ash fill could cause trouble to the pumps. To solve *both* problems, Ed Good, General Superintendent for Woodcrest, set up a 6E4 Marlow Contractors Pump. Running six hours a day, this 90,000 GPH, self-primer, sold by Foundation Equipment Co., completely controlled the onrushing water. The 360° cleaning action of the Marlow kept the casing clean and, because there were no close clearances in the pump to wear, the abrasive liquid caused no trouble in the units. Ed Good had used Marlows for some time and *knew* they would perform without trouble.

Marlows can help solve your construction pumping problems. There's a unit from Marlow's complete line of self-priming and diaphragm pumps that's just right for your job. Write today for the name of your Marlow dealer and a copy of Marlow Contractor Pumps Bulletin C-09.

Marlow PUMPS®

MARLOW PUMPS®

DIVISION OF BELL & GOSSETT CO.

Midland Park, New Jersey

Morton Grove, Illinois • Longview, Texas

8-278

For more facts, use Reader-Reply Card opposite page 18 and circle No. 299

Construction accounting, management procedures

"Construction Accounting and Financial Management", by William E. Coombs, relates accounting and record keeping to the size of the firm, the type of work being done, and shows how to gain effective financial control over every operation.

Starting with the basic operating and accounting patterns of a construction firm and their relationship, the author covers in 24 chapters every aspect of construction accounting and management such as prejob procedures; purchasing and subcontracting policies and procedures; changeover routines; accounting for labor, materials, supplies, and equipment; subcontract costs; and overhead. Also detailed are vouchering and disbursement control, accounting for income and cash receipts, classification of accounts, financial statements and reports, auditing, insurance, and business-machine applications.

The book contains 200 check lists, illustrations, and sample forms and reports. Priced at $12.85, the 490-page book may be purchased from the F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.

Sika Chemical holds technical session

The second of the biannual technical schools for the sales engineers, construction men, and dealers of Sika Chemical Corp. was held at the firm's home office in Passaic, N. J. At the meetings delegates were instructed on new developments in concrete technology and construction techniques. The concrete schools have been a regular feature at the company's plant for the past seven years.

HRB bulletin analyzes tax allocation problems

"A Highway Taxation Cost-Benefit Analysis", Special Report 35, is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. The bulletin covers the highway-needs study movement, review of the studies, nature of the problem, objectives of a cost allocation, bases for a cost allocation, and a proposed cost-benefit analysis.

A summary and a list of references complete the bulletin. The $1 report may be purchased from the HRB.

Chicago Bridge & Iron joint owner of new firm

Chicago Bridge & Iron Co., Chicago, Ill., and Buckeye Pipe Line Co., New York City, have formed a jointly owned company called Buckeye Tank Terminals, Inc. The new firm will construct, own, and operate terminal tankage on the Buckeye Pipe Line system, or at other locations; and will lease or arrange for the use of those facilities by a specified individual customer.

Located at 30 Broad St., New York City, the firm is headed by Charles Ashmun, former assistant to the president of Buckeye Pipe Line.

MATERIALS for the upper floors of the new addition to the State Department quarters in Washington, D. C., is hoisted to crews by a Lorain Moto-Crane. John R. McShain, Inc., Baltimore, Md., is the contractor; Graham, Anderson, Probst & White, Inc., is the architectural and engineering firm on the job.

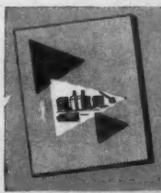
Here is the BUTLER PLANT with which Denton Construction Company set a new world's record.

WORLD'S HIGHWAY BATCHING RECORD!

IN ONE DAY 6,029 LINEAL FEET

This is a record announced by the Michigan State Highway Department on behalf of Denton Construction Company

- Paving time. . . . . 12 hours
- Batching production . . . . . 2,968 batches
- Cement consumption . . . . . 5,800 barrels
- Paving Production. . . . . 6,029 feet *(length)* x 24 feet *(width)* x 9 inches *(thickness)*
- Square yards. 16,077
- Cubic yards. 4,019
- Number of pavers. . . . . Three 34E dual drums
- Number of batching plants . . . . . One BUTLER TX-4
- Site . . . . . U. S. 23 near Dundee, Michigan
- Contractor. . . . . DENTON CONSTRUCTION COMPANY



Do you want to know more about the BUTLER TX-4 and its versatility in production? Just write "TX-4" on a postcard with your name and address. We'll rush complete details immediately.

Notice that 3 pavers were used. The BUTLER TX-4 can readily satisfy 4 dual drums. What would the record be if 4 pavers had been on that job?

But interestingly, the BUTLER TX-4 is efficient and economical where a job requires only ONE PAVER. Just a matter of the number of batchers and their arrangement.

BUTLER BIN CO.

971 Blackstone Avenue • Waukesha, Wisconsin

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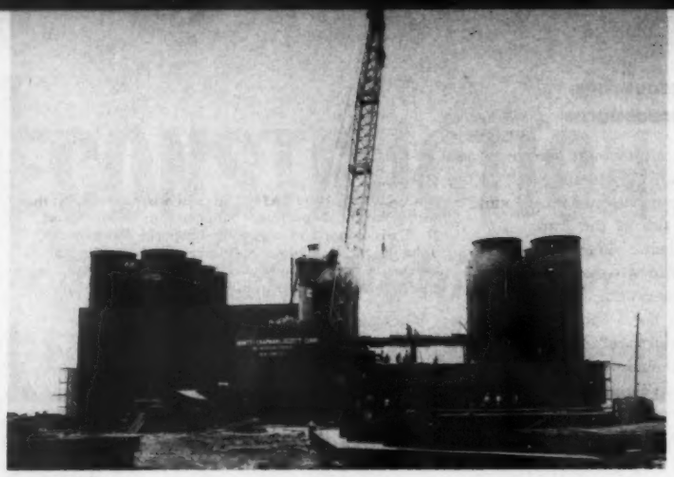
Steel caisson fabrication for Throgs Neck Bridge piers becomes a project in itself



For more facts circle

A second lift of skin panels for the that will form the tion of New York Throgs Neck Bridge Queens side is set American barge-m derrick owned by Chapman & Scott, ture contractor. J. K. ing Co., Inc., Yonkers is doing part of the cation at its yard.

by ANTHONY N. MAVROUDIS, field editor

Prefabrication of the two steel cutting edges for the Merritt-Chapman & Scott contract on the Throgs Neck Bridge over the East River in New York, as well as supplying all the fabricated sections of the caisson skin plates and digging wells, is keeping J. K. Welding Co., Inc., Yonkers, N. Y., busy these days.

The company is, at present, turning out skin plates and digging-well sections for the contractor as the tower-pier caissons are being sunk at the Bronx and Queens sides of the river.

Cutting edge assembled

J. K. Welding began operations by assembling the Bronx cutting edge, launching it, and then towing it to the contractor without any outside skin panels or digging wells. This was done at the start of last season to permit M-C&S' river work to get under way. J. K. Welding then began the fabrication of the second cutting edge, for the Queens tower caisson. This one was assembled, launched, and outfitted with some skin panels and digging wells for a height of 54 feet above the cutting edge.

The cutting edges were assembled on launching ways at the yard so that the units could be floated after completion. The Bronx cutting edge was shipped to the job site directly after launching, but the Queens edge

The Lincoln 500-amp welders on the derrick barge are among 16 welding machines being used to fabricate the cutting edges. Caissons for both the Queens and the Bronx tower-pier foundations are identical, the cutting edge consisting of four 13-foot-deep perimeter box girders braced with transverse longitudinal box girders.

It was logical for Hoffman Trucks, Inc. of Belleville, New Jersey, prominent among leading heavy movers, to come to Rogers Brothers Corporation for the design and construction of a most unusual trailer to meet their special needs. Its tremendous size is indicated in contrast with a Rogers 25-ton TVT top value trailer.

Conservatively rated at 200 tons it mounts 40-12x24-14 ply tires on axles which oscillate lengthwise and crosswise to equally distribute the load.

THE FRONT GOOSENECK rides on a dolly to increase the number of tires, improve maneuverability and absorb part of the load on the tractor. The trailer can be hauled with or without the dolly.

A self-powered hydraulic mechanism will raise or lower the deck for greater roadway or overhead clearance as required.

The unit at the rear supplies power for steering in addition to its use on the deck height and gooseneck removal.

THE DETACHABLE REAR ASSEMBLY consists of two — 8 tire double oscillating units with two removable 4 tire units attached to the walking beam. This places a total of 24 tires under the rear of the trailer.

The detachable axles are caster mounted to track with the trailer in forward movement. Power steering is applied to the caster axle for sharp turns or for steering in a reverse direction.

The detachable assembly and the front dolly may be removed for standard semi-operation.

To meet length limitations and permit faster return trips, a "Stub" connector is substituted for the regular deck which is carried on the goosenecks. This shortens the overall length approximately 30 feet.

GET THE ROGERS CATALOG *or request additional information if desired. If you have an unusual problem the advice of Rogers' engineers is available without cost or obligation.*

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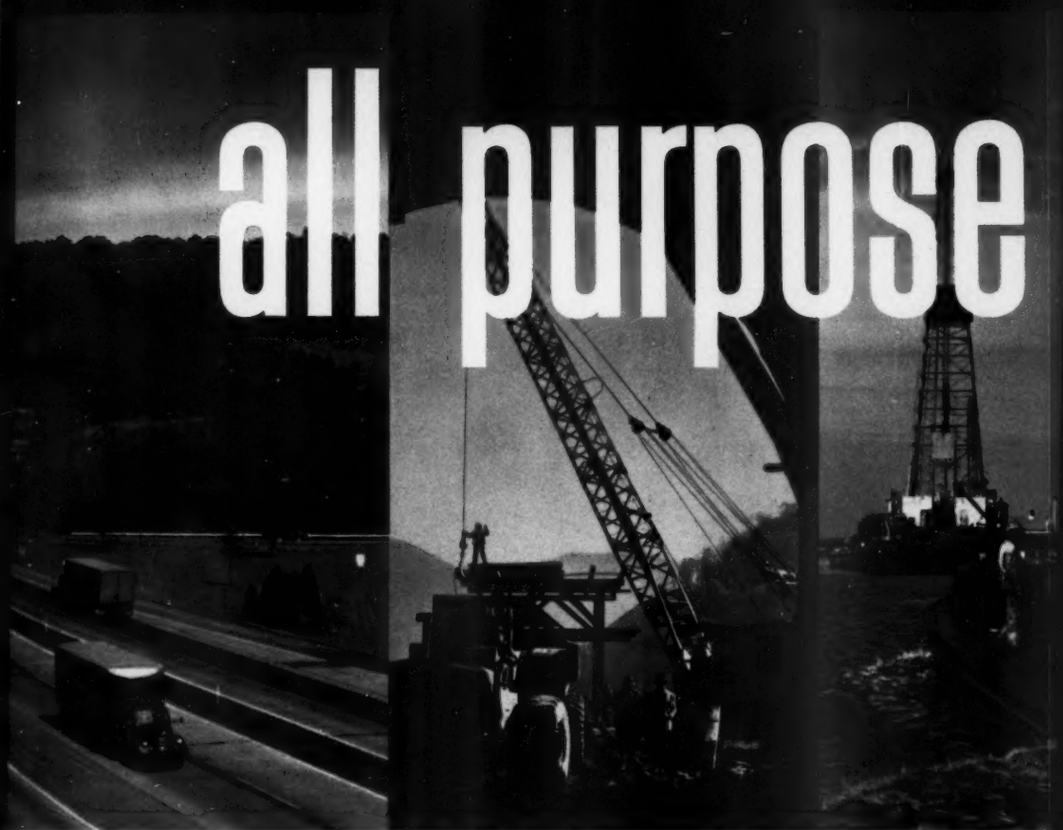
A whole new
concept
in power

all purpose power line

(20 to 1650 H.P. IN ONLY 3 CYLINDER SIZES "V" AND "IN-LINE")

all purpose



GM Diesel combines 8 New Basic "V" and "in-line" engines with

To help industry fill its power needs, GM Diesel engineers have developed the most comprehensive power concept since they pioneered the small 2-cycle Diesel.

Using only 3 cylinder sizes, they have more than doubled the number of basic engines – vastly increased the horsepower range – yet maintained the family relationship and parts interchangeability for which GM Diesels are famous.

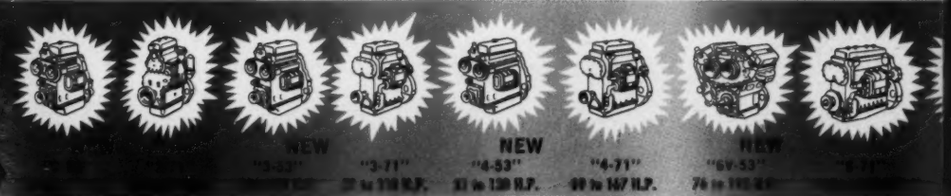
Each engine features the ultimate in *compactness, light weight, high efficiency, durability and inexpensive maintenance.*

Basing their design on that of the versatile and capable GM Series 71 Diesel, GM Diesel engineers have created 8 new basic "V" and "in-line" engines which will add vastly new power coverage to the present Series 71 and 110.

First, the new Series 53 Diesel—comprising four basic "V" and "in-line" engines—is a smaller, more compact version of the famous "71."

Here, at last, in the Series 53, are Diesels which cover the lower horsepower ranges as never before. They hurdle the barriers which have limited the use of Diesel power in a whole host of applications. They offer new opportunities for Diesel power to farmers, boatowners and industrial users by making available GM Diesels particularly suited to their needs. They will pay for themselves amazingly fast when they take over from gasoline engines.

Four new "V-71" engines complete the additions—widen the power range of the "in-line" 71 Series—set new standards for low weight and small size per horsepower. These "V-71"



power line

(20 to 1650 H.P. in only 3 Cylinder Sizes)

its proved "Jimmy" Diesels

engines bring far more power than ever before possible to the big brutes of the construction, mining, petroleum, logging and marine industries—up to 1650 H. P. when turbocharged.

Production has started and complete programming has been established on all new engines. Non-turbocharged engines will be available first, followed later by Turbopower models to complete the power range.

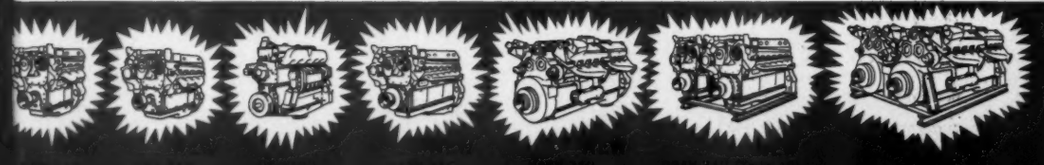
So—now more than ever before, it pays to standardize on GM Diesel power. For whatever you want a Diesel to do, there's a GM Diesel to do it for you—faster, better, at less cost. Truly, here is a whole new concept in Diesel power—the All-Purpose Power Line. Get the full story by writing GM Diesel, Detroit 28, Michigan.

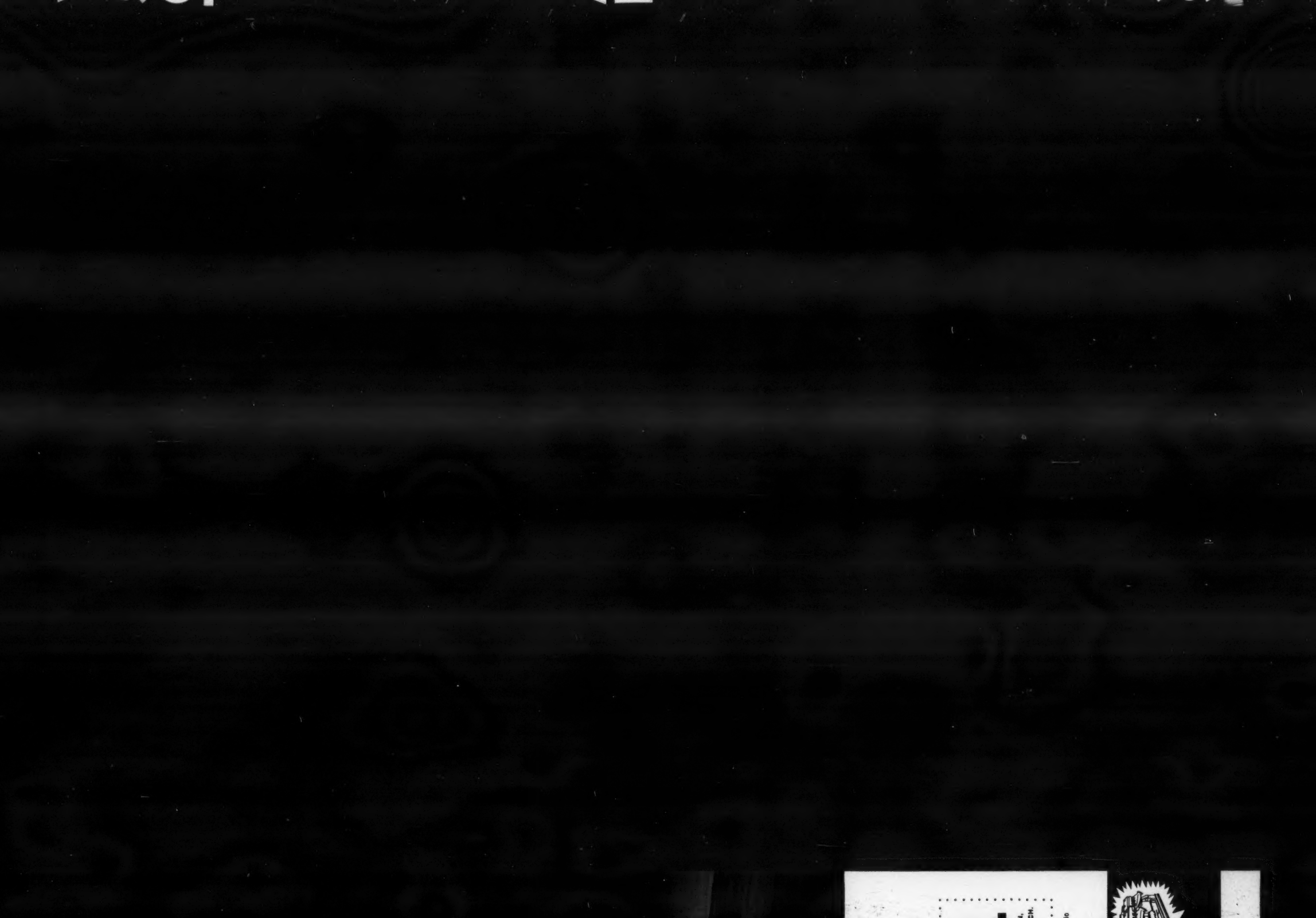
GM DIESEL POWER

GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

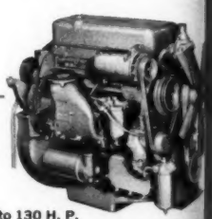
In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide





NOW...A "JIMMY" DIESEL for every power purpose

20 to 1650 H.P. in only 3 cylinder sizes

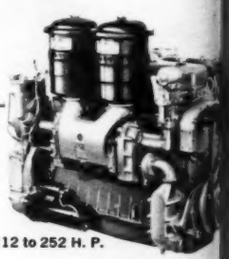


NEW SERIES 53

—smaller Diesels millions can use
2, 3, 4 and V6—20 to 195 H. P.

A scaled-down version of the famous Series 71 GM 2-cycle Diesel—identical in design principles—the new 53 Series incorporates the time-proved features of patented GM unit fuel injection and uniflow blower scavenging in more compact, lightweight units. These spacesaving engines open up whole new fields of Diesel usefulness in trucks, buses, and taxicabs, in marine service, as well as in tractors, generators, loaders, lift-trucks and many other types of industrial equipment.

"4-53"—51 to 130 H. P.

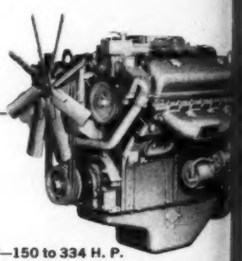


SERIES 71 "IN-LINE"

—the versatile, time-proved economy Diesel
2, 3, 4, 6, Twin 4, Twin 6, Quad 6—33 to 1008 H. P.

Never, in industrial history, have there been Diesels as versatile and capable as the Series 71 GM Diesels—built in a wide range of Fan-to-Flywheel, Package Power, Torque Converter, Generator Sets, Economy truck engines and Turbopower models. And, because of GM Diesel's unique power concept—a family of engines featuring unequaled parts interchangeability—these time-proved "Jimmy" Diesels become even more valuable as key components of the GM Diesel All-Purpose Power Line. Today's "71" engines incorporate the results of 20 years' continuous improvement.

"6-71"—112 to 252 H. P.

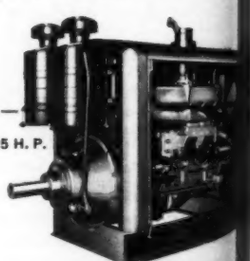


NEW "V-71"

—higher horsepower in smaller, more compact units
V6, V8, V12, V16, Twin V12, Twin V16—112 to 1650* H. P.

The new V-71 "Jimmy" Diesels are a further dramatic illustration of GM Diesel's mighty new power concept—rounding out the All-Purpose Power Line—yet retaining the GM family relationship and parts interchangeability. Here are engines destined to give you a better investment-earnings ratio than any you have ever had before. Diesels that boast the ultimate in compactness, light weight, high efficiency, durability, inexpensive maintenance and parts interchangeability.

"8V-71"—150 to 334 H. P.



*Turbopowered

SERIES 110

—a favorite on heavy-duty jobs
6-110 and Twin-6-110—160 to 670 H. P.

"6-110"—160 to 335 H. P.

Renowned for its ability to get big jobs done faster at lower cost, the GM "6-110" has stepped in and taken over thousands of jobs for every kind of business—done those jobs as never before—greatly expanded the usefulness of Diesel power. Built in single- and multiple-engine units, the Series 110 engine is available for a wide variety of heavy-duty applications in earth-moving, oil-field, railroad and marine equipment.

GM Diesel
Detroit 28, Michigan
Send me detailed information on new GM Diesel All-Purpose Power Line. I am interested in new Series 53 (.....), Series 71 "in-line" (.....), new V-71's (.....), Series 110 (.....).

NAME.....TITLE.....

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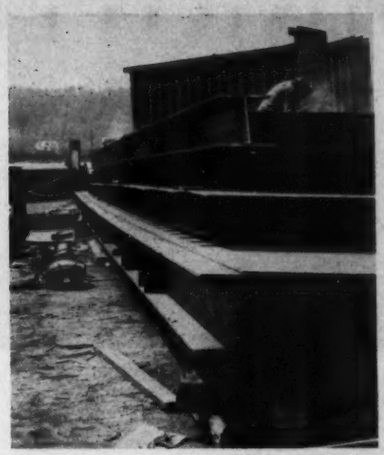
Parts and Service Worldwide

Specifications subject to change without notice.

Skin panels for the caissons are turned out in the yard. Here, the ⅜-inch steel plates are being fitted with wide-flange beams as stiffeners on 20-inch centers. The tops of the panels have a horizontal wale welded to stiffeners and skin plates.



A welder works on a stack of skin panels. A horizontal wale, such as the one at bottom, tops off every panel. The panel just above it shows construction of the opposite end of a panel. Note the notch in the stiffener beams to fit over the wale flange and against the skin plate.

was moored alongside an outfitting dock and a derrick barge. These were used to erect the skin plate and digging-well steel sections.

The cutting edges, which are identical, were built in exactly the same manner. Each was fabricated at the yard and assembled over the pair of launching ways which extend about 100 feet into the water on a pitch of 1 inch to the foot.

The ground ways of each of the two parallel launching ways, 70 feet on center, consist of a pair of 16×16-inch greased timbers 14 feet on center. J. K. Welding used 14×14-inch sliders, on top of the 16-inch timbers, which were cross-braced over each way. The sliders and cross bracing were then topped with steel cribbing that supported the cutting edge during assembly.

A perforated steel plate was used to trigger the launching. It was bolted to the sliders and the 16-inch timber at each launching way so that the cutting edge could not move before it was ready to be launched. The line of perforations in the steel plate were later used to synchronize the launching.

Cutting-edge fabrication

The cutting edge consists of four 13-foot-deep perimeter box girders braced with transverse and longitudinal box girders. The perimeter girders, made up of steel plate and framing, are 5 feet wide for the top 6 feet, and taper on the inside face for the next 7 feet to a width of 1 foot at the bottom. The bottoms of the perimeter girders were reinforced with structural tees welded to the outside and inside wall panels. Stiffener plates were welded along the tee on 2-foot centers. The tee provides the actual cutting edge for the unit. Steel plates ¾ inch thick were used for the bottom 4 feet of the cutting-edge walls for additional strength. The remaining height of the walls was constructed with ½-inch-thick steel.

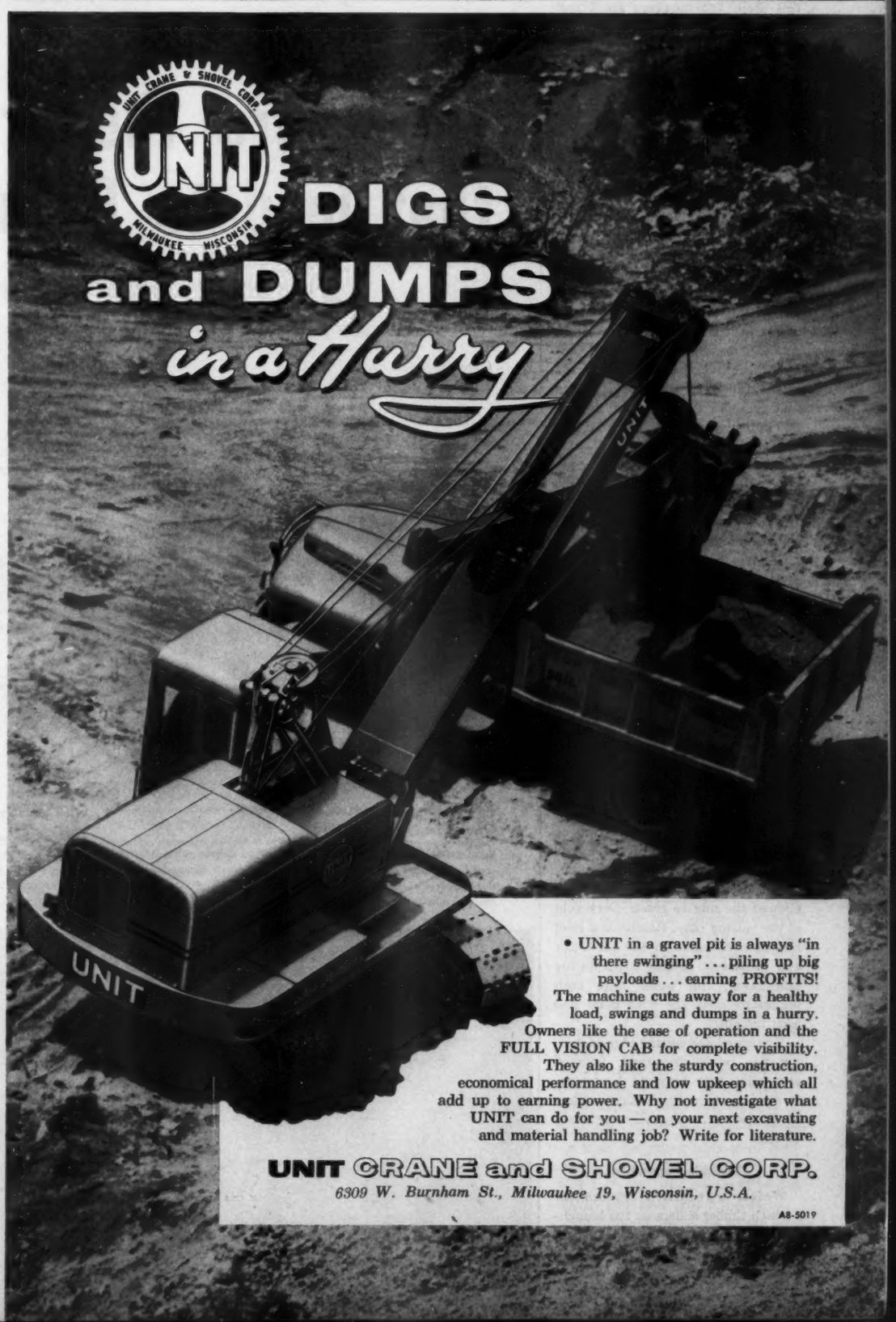
The over-all dimension of the cutting edge is 75×162 feet. Eight 65-foot-long transverse box girders, spaced at 14 feet, were completely fabricated in the yard and placed in one piece by a Manitowoc crane. Six of these girders are 3 feet wide and 6

(*Continued on next page*)

For more facts, circle No. 302→

UNIT CRANE & SHOVEL CORP.
UNIT
MILWAUKEE WISCONSIN

DIGS
and DUMPS
in a Hurry



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A8-5019

◄ Deck plates are being installed on the cutting edge for the Bronx pier foundation. Note the two transverse cutting edges and the three sides of the perimeter cutting edge.

As the cutting edge nears completion, square deck plates are cut to form the 14-foot-diameter digging-well openings. The cutting edge, with an over-all dimension of 75 × 162 feet, has 36 of these digging wells. ►

(*Continued from preceding page*)

feet deep; two members are 4 feet wide and 13 feet deep. The two 13-foot-deep transverse girders extend the full depth of the cutting edge and taper from a 4-foot width at the top to a 1-foot width for the last 7 feet of depth. Spaced at the third points, and separated by a pair of short girders, the 13-foot-deep girders act as additional cutting edges to supplement the perimeter cutting edges.

Three longitudinal box girders, 3 feet wide and 6 feet deep, were formed by placing 14-foot-long sections between the transverse girders. The longitudinal girders do not have any cutting edge and act merely as braces for the long dimension of the cutting edge. Openings were left between the longitudinal and transverse girders to form passageways that allowed concrete to flow into all the watertight box girders and cutting edges.

The entire assembly was made watertight by welding the bottoms of the box girders and cutting edges, and welding a ⅜-inch-thick deck plate over the tops of the girders. J. K. Welding formed the covering deck by welding square plates, about 17×17 feet, to the box girders and to each other.

The 14-foot-diameter digging-well openings in the deck were formed by burning the square openings of the welded deck plates. These 14-foot-diameter openings were cut in the deck around every 14-foot square formed by the transverse and longitudinal box girders. Each circle was exactly tangent with the vertical faces of the box girders.

After the cutting edge arrived at the job site, concrete for the box girders was placed through holes cut in the deck plate. The passageways allowed the mix to reach every void of the cutting edge. Reinforcing steel had been installed in the perimeter and transverse cutting edges during fabrication; this would have been impossible after the deck plate had been installed.

The completed cutting edge, including the reinforcing steel, weighed about 525 tons prior to launching. It also overhung the outside sliders of the two launching ways by about 42 feet.

Launching operation

Wedges were driven between the 14-inch timber sliders on the launching ways and the steel H-beams

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Look into the rock-lugging, grade-beating 24-ton "95"...

- **Bonus-powered,** with a 335 hp high-torque turbo charged diesel engine to beat steep grades and high altitudes with full payloads!
- **Your choice of torque converter** with powershift, or 9-speed constant mesh transmission. Speeds to match every load and road.
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- **Springs with extra leaves** and **extra length** to ... the payload, smooth the ride.
- **Positive power-steering, Torqmatic braking,** po... vision, for unmatched operating ease and load-speeding ...
- **Up to 25% higher hauling speeds**—the "95" ... ball, fully loaded, up to 38 mph.
- **Faster reverse speeds**—for spotting to load, or po... full loads for dumping. The gear-drive "95" can travel ... 7.1 mph. in reverse.
- **9-second dumping**—another cycle-speeding feature.

...and the 250-hp, 18-ton "65" has equally outstanding features.

International® Construction Equipme...

International Harvester Co.
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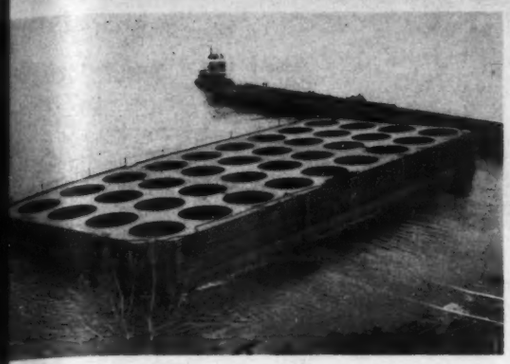
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors ... Self-... Scrapers and Bottom Dump Wagons ... Crawler and Rubber-Tired Loade... Highway Haulers ... Diesel and Carbureted Engines ... Motor Trucks ... Farm ... and Equipment.

Power for steep grade climb-outs wins steady job for five "65's"

Bonus Turbo Charged Diesel power to deliver extra-tonnage loads up a haul road with a 17% average grade accounts for the dependence of Caldwell Engineers on five "65" Payhaulers—on the $13 million hydro and flood-control Oliver Dam, Columbus, Ga.

Contractor doubles load delivery speed with positive Torqmatic braking!

Central Pennsylvania Quarry and Stripping Co. ... *Torqmatic braking* of their 5-unit "95" Payhauler fleet with dou... load delivery speed—by increasing safe downhill hauling sp... They've compared "95's" directly to other off-road equipm... rock-hauling duty!



◄ After the steel retaining plates that hold back the cutting edge are cut, the edge breaks loose and slips 100 feet down the ways and into the Hudson River. This edge for the Bronx pier was towed to the site without outside skin panels or digging wells.

Tugs tow the cutting edge to the job site between the Bronx and Queens. It had to be brought around the Battery and up the East River, since the Harlem River—which provides a shorter route to the site—was considered too narrow. ►

supporting the steel cribbing prior to launching. This was done to remove all the auxiliary cribbing supporting the cutting edge overhangs and the box girders. At the same time, the steel cribbing over the launching ways was tied to the cutting edge so that it could be retrieved after the launching. In this way it was possible for J. K. Welding to reuse the cribbing for the second cutting edge.

The perforated steel plate between the slider and ground ways had to be cut before the launching. Two men with torches, positioned at each of the launching ways and directed by a foreman, simultaneously cut the steel plate between the perforations. The steel between the holes was burned in this manner to prevent one side from breaking loose before the other. This process was repeated eight times before the plates broke and the cutting edge slipped down the ways into the water. Once afloat, the steel cribbing was untied, picked up by a barge-mounted crane, and brought ashore. At this point the cutting edge had a freeboard of 5 feet.

Derrick erects steel

The Bronx cutting edge was floated directly to the job site after launching, but the Queens edge was floated and moored alongside a derrick barge at the fabricator's yard. M-C&S lent J. K. Welding an American 50-ton barge-mounted derrick to handle lifts during fabrication of the caisson at the yard.

Before shipping the Queens cutting edge to the job, J. K. Welding had to erect a 54-foot lift of digging wells and outside skin plate. In order to position the 14-foot-diameter digging wells in single lifts, the fabricator had to figure the weight of the wells, cross bracing, and a 20-foot lift of outside skin panels to prevent the surface of the cutting edge from sinking below water. Because of this, only 19 digging wells were placed in a 54-foot lift, while the remaining 17 were erected in 20-foot lengths. The shorter wells were positioned in such a symmetrical way as to provide access, without excessive maneuvering of the derrick barge, to the far side of the caisson. The figuring was so close during this operation that by the time the skin panels were completed, and before the short wells were built up, the freeboard of the cutting edge was only 9 inches.

The ⅜-inch-thick skin plates were

ve features
ee ownership!

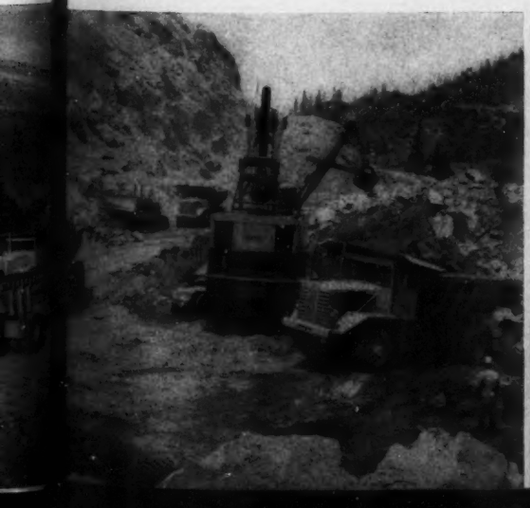
Prove what it means to command the Payhauler ratio of power to payload—for hauling up to 25% faster; beating grades and altitude. Try Payhauler "pick-up-truck" spotting ease—"zip-around" power steering—exclusive high reverse—and all the other Payhauler advantages. See your International Construction Equipment Distributor for a demonstration!

gh-percentage availability proves built stand-up-ability!

.5 work availability through one measured 12-week period the mark set by a 10-unit "95" Payhauler fleet—high-balling k over steep High Sierra grades, on mammoth Pool Hydro oject, for Southern California Edison Co. Such records result om reserve power, reserve frame and transmission strength, and erve shock-resistance!

Another thirty "95" Payhaulers join Merritt-Chapman and Scott fleet!

Merritt-Chapman and Scott Corporation has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.



←For more facts, circle No. 303

(*Continued from preceding page*)

butt-welded on the outside with bevel welds backed up by a vertical beam of the skin panel to provide a strong and watertight surface. The panels have these vertical wide-flange beams welded on 20-inch centers and horizontal wide-flange wales welded along the top. The spacing of the horizontal wales, which varies according to the panel heights, is determined by the sinking procedure used by M-C&S. The vertical stiffener flanges are notched, top and bottom, to permit the horizontal wales to fit over the stiffeners and up against the skin plate. This also permits the vertical stiffeners of the next panel lift to butt up against the web of the wale. Internal horizontal bracing is used in both directions between the digging wells to support the outside skin panels. Each transverse and longitudinal brace is connected to the skin panels by welding the knee-bracing to the horizontal wales.

Digging wells

The 14-foot-diameter digging wells are being fabricated in various lengths to correspond to the lifts of the skin panels. They are being fabricated from ¼-inch steel plates, roughly 10 feet wide, which are rolled into semicircles and welded together. These well sections are stiffened by 3×⅜-inch plates welded to the circumference of the section at about the mid-point. The flange of a 3-inch tee is welded over the welded seam that joins well sections so that every other stiffener is a tee. Digging wells, fabricated and barged to the contractor in about 20-foot lengths, are joined by bolting end flanges together. A gasket makes this connection watertight. THE END

Articles on sinking caissons for the Throgs Neck Bridge appeared on pages 42 and 54 in last month's issue.

Condemning property for highway purposes

Highway Research Board Special Report 33, "Condemnation of Property for Highway Purposes, A Legal Analysis, Part II", is now available for $2.40. The booklet covers three aspects of the subject: court preference; time of possession—constitutional provisions, administrative and judicial methods of condemnation; and possession pending appeal.

Three appendixes consist of a summary of laws by states, statutes cited, and a table of cases. The material for this booklet and its predecessor, Part I, was derived from a research program undertaken by the HRB's Highway Laws Committee. The object of the research is to assemble the facts of highway law and to isolate the important elements, thus providing the states with a basis for evaluating the effectiveness of their law, both in relation to the experience of other states and in light of their own needs.

The booklet may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Quaker Rubber film shows rubber-plant operations

"Progress in Industrial Rubber Products", a 16-mm color and sound movie, describes the operation of a rubber plant. Released by the Quaker Rubber Division, H. K. Porter Co., Inc., the 25-minute film shows how raw materials are used to produce rubber products. It details the process of making such items as conveyor belts, wrapped and molded hose, and insulating tapes.

Arrangements for showing the film may be made by contacting the advertising department of the division, Tacony and Comly Sts., Philadelphia 24, Pa.

Convention calendar

January 14–15 The Beavers
Awards Meeting, Biltmore Hotel, Los Angeles, Calif. J. W. Watson, assistant secretary-treasurer, The Beavers, 3932 Wilshire Blvd., Los Angeles 5, Calif.

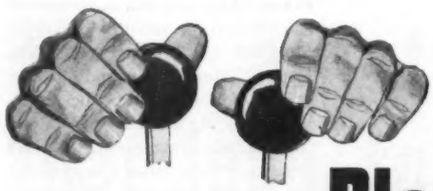
January 19–22 American Road Builders' Association
Fifty-seventh Annual Convention and Materials and Service Exhibit, Dallas Memorial Auditorium, Dallas, Texas. Norman T. Almquist, administrative services manager, ARBA, World Center Bldg., Washington 6, D. C.

January 19–23 Associated General Contractors of America
Annual Meeting, Americana Hotel, Miami Beach, Fla. James D. Marshall, executive director, AGC, 20th and E Sts. N. W., Washington 6, D. C.

January 23–24 California Civil Engineers and Land Surveyors
Annual Convention, Statler-Hilton Hotel, Los Angeles, Calif. Joseph M. Cone, public relations counsel, CC of CE&LS, 5446 Sierra Vista Ave., Los Angeles 22, Calif.

January 25–29 Associated Equipment Distributors
Fortieth Annual Convention, Conrad Hilton Hotel, Chicago, Ill. W. G. Bowman, administrative assistant, AED, 1 E. Cedar St., Chicago 11, Ill.

January 26–27 Gear Symposium
First Annual Symposium, sponsored by the American Society of Lubrication Engineers, Morrison Hotel, Chicago, Ill. ASLE, 84 E. Randolph St., Chicago 1, Ill.



Your operators' fingertips can control this greater dozing capacity

Planet-Powered "24" oz

UNMATCHED FOR BENCHING, SIDE-CA

The TD-24 outproduca parable crawlers on be or side-casting without ing" into the bank, working speed or tra despite side-draft of load. TD-24 operator c acts rear-end "slueing operating the load-side in high speed-range keeping the outside t low range. This exclu separate, power-on-a track feature provides load *follow-through*. C tors of king-size ste clutch crawlers, by c must release the ste clutch on the outside t keep tractor pushing fo This kills half the pro power and traction!

CYCLE SHORTENIN FASTER REVERSE S

Faster reverse speeds TD-24 operator cut cy and boost production tle-dozing, especially pushes. At the end of t TD-24 operator depre decelerator pedal, and shifts to a fast reverse As he highballs ba another pass, he use planetary shifting a to speed repositio "24" for the next p

January 26–28 Association of Asphalt Paving Technologists
Annual Meeting, Brown Palace Hotel, Denver, Colo. Ward K. Parr, secretary-treasurer, AAPT, 1224 E. Engineering Bldg., University of Michigan, Box 619, Ann Arbor, Mich.

January 26–29 Plant Maintenance and Engineering Show
Exhibit, Public Auditorium, Cleveland, Ohio. Banner & Greif, 369 Lexington Ave., New York 17, N. Y.

January 26–February 5 Engineering and Management Course
Course, University of California, Los Angeles, Calif. Reno R. Cole, EMC, College of Engineering, University of California, Los Angeles 24, Calif.

January 27–30 National Crushed Stone Association
Annual Meeting, Americana Hotel, Miami Beach, Fla. J. R. Boyd, executive director, NCSA, 1415 Elliott Place N. W., Washington 7, D. C.

January 28 The Moles
Award Dinner, Waldorf-Astoria Hotel, New York, N. Y. The Moles, Biltmore Hotel, New York 36, N. Y.

January 28–29 Midwest Welding Conference
Fifth Annual Conference, Chemistry Building, Illinois Institute of Technology, Chicago, Ill. Harry Schwartzbart, supervisor of welding research, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

January 28–30 New York State County Highway Superintendents Association
Meeting, DeWitt Clinton Hotel, Albany, N. Y. Harry R. Mason, secretary, NYSCHSA, Fonda, N. Y.

January 29 Maryland Association of Engineers
Meeting, Lord Baltimore Hotel, Baltimore, Md. Louis B. Kravetz, executive secretary, MAE, 314 Municipal Bldg., Baltimore 2, Md.

February 2–6 Short Course for Contractors' Supervisors of Highway Construction
Short Course, Ohio State University, Columbus, Ohio. Prof. Emmett H. Karrer, Department of Civil Engineering, SCCSHC, Ohio State University, Columbus 10, Ohio.

February 2–6 National Bituminous Concrete Association
Fourth Annual Convention, Americana Hotel, Miami Beach, Fla. H. K. Griffith, executive director, NBCA, 1145 19th St. N. W., Suite 218, Washington 6, D. C.

February 9–13 American Society of Civil Engineers
Convention, Hotel Statler, Los Angeles, Calif. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

February 16–19 National Ready Mixed Concrete Association and National Sand and Gravel Association
Twenty-ninth Annual Convention of the NRMCA, and the Forty-third Annual Convention of the NSGA, Roosevelt Hotel, New Orleans, La. Vincent P. Ahearn, executive secretary, NRMCA-NSGA, 527 Munsey Bldg., Washington 4, D. C.

February 17–19 Short Course for Supervisors of Earthwork Construction
Short Course, Ohio State University, Columbus, Ohio. Prof. Emmett H. Karrer, Department of Civil Engineering, SCSEC, Ohio State University, Columbus 10, Ohio.

February 23–26 American Concrete Institute
Fifty-fifth Annual Convention, Statler-Hilton Hotel, Los Angeles, Calif. William A. Maples, secretary-treasurer, ACI, P.O. Box 4754, Redford Station, Detroit 19, Mich.

February 24–26 Illinois Annual Conference on Highway Engineering
Forty-fifth Annual Conference, Illini Union Bldg., University of Illinois, Urbana, Ill. John W. Hutchinson, assistant conference director, IACHE, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

February 24–26 Short Course for Supervisors of Bridge Construction
Short Course, Ohio State University, Columbus, Ohio. Prof. Emmett H. Karrer, Department of Civil Engineering, SCSBC, Ohio State University, Columbus 10, Ohio.

February 26–27 Illinois Traffic Engineering Conference
Annual Conference, Illini Union Bldg., University of Illinois, Urbana, Ill. John W. Hutchinson, assistant conference director, ITEC, 304 Civil Engineering Hall, University of Illinois, Urbana, Ill.

February 26–27 Mississippi Highway Conference
Conference, Continuation Center, University of Mississippi, University, Miss. W. N. Jones, Jr., acting director, MHC, Department of Conferences and Institutes, University Extension, University of Mississippi, University, Miss.

March 3–4 Utah Highway Engineering Conference
Twentieth Annual Conference, Union Bldg., University of Utah, Salt Lake City, Utah. Preston D. Linford, conference chairman, UHEC, Civil Engineering Department, University of Utah, Salt Lake City 12, Utah.

March 5–6 Highway Engineering Conference of the University of Colorado
Conference, University of Colorado, Boulder, Colo. Roderick L. Downing, director, HECUC, 207 Engineering Bldg. No. 1, University of Colorado, Boulder, Colo.

March 8–14 American Congress on Surveying and Mapping and American Society of Photogrammetry
Annual Meeting, Shoreham Hotel, Washington, D. C. C. E. Palmer, secretary-treasurer, ACSM-ASP, 1515 Massachusetts Ave. N. W., Washington 5, D. C.

March 9–10 Georgia Highway Conference
Conference, Architecture Auditorium, Georgia Institute of Technology, Atlanta, Ga. Director, Short Courses and Conferences, GHC, Georgia Institute of Technology, Atlanta 13, Ga.

March 10–20 Civil Engineering Conference
Conference, University of Florida, Gainesville, Fla. F. W. Gilcreas, CEC, Department of Civil Engineering, University of Florida, Gainesville, Fla.

March 17–19 National Association of Corrosion Engineers
Fifteenth Annual Conference and Corrosion Show, Sherman Hotel, Chicago, Ill. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

March 17–21 New York State Association of Highway Engineers
State Convention, Hotel McAlpin, New York City. George J. Marks, convention chairman, NYSAHE, State Office Bldg., Babylon, Long Island, N. Y.

March 18–20 Association of Highway Officials of North Atlantic States
Annual Convention, Traymore Hotel, Atlantic City, N. J. Kenneth D. Rice, executive secretary, AHONAS, 1035 Parkway Ave., Trenton, N. J.

March 30–April 2 Purdue Road School
Forty-fifth Meeting, Memorial Union Bldg., Purdue University, West Lafayette, Ind. Dr. J. F. McLaughlin, assistant professor of civil engineering, PRS, Civil Engineering Bldg., Purdue University, Lafayette, Ind.

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two-finger ease your operators can
you a paydirt dozing dividend of up to
, on International TD-24 crawler trac-
Exclusive Planet Power steering, plus
reverse speeds up to 7.5 mph, arm the
24 operator to outblade steering clutch
petitors by amazing margins!
enching, bank-cutting, side-casting, or
ing around the curve, the TD-24's dozer
s cutting—keeps paydirt on the move—
n't spill the extra-profit margin with
y" steering. Planet Power steering gives
operator full-time "live" power on both
s—eliminates load-losing, power-wasting
d-track drag" in turns—clips vital minutes
shuttle-dozing cycles!
our operator "pours on" full-load power
shifting the TD-24 into first gear and
ng steering levers into low range. Two
rs can then instantly power-shift the Hi-
planetary into load-matching high range!
t the end of the pass, your TD-24 operator presses the engine decelerator for quick-shifting to fast reverse, zips back for another pass. Hi-Lo planetary levers give two separate speeds in any forward or reverse gear selected!

Prove to yourself how your operators can boost dozing dividends at the controls of Planet-Powered "24's." And measure the production advantages of "24's" as pushers or pull-type scraper power. Call your International Construction Equipment Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

PAY-OFF STRAIGHTAWAY PUSHES

This whopping bladeful of wet sand is dozed fast by the TD-24 operator who: 1) shifts on-the-go into first gear forward, by using the synchro-mesh transmission; and 2) utilizes instant-shift Hi-Lo planetary system of flicking levers into low-range position. As load lightens, operator power-shifts into high-range position, increasing working speed 27%! Decelerator pedal provides for "no-hands" slow-ups!

←For more facts, circle No. 304

With work combined on adjacent 8 and 7-mile projects, rigs keep operating productively on U. S. 60 and 85 near Socorro, N. Mex. A Euclid push-loaded by an Allis-Chalmers HD-21 in the borrow pit is part of the small spread on these jobs.

The borrow is shaped on the fill by a Cat No. 12 grader while a Gebhard sheepsfoot roller, pulled by an Allis-Chalmers HD-20, compacts the fill. Moisture added in the borrow pit eliminated manipulation and equipment congestion on the fill.

Base-course compaction is handled by two Tampo 50-ton rubber-tire rollers pulled by a Minneapolis-Moline wheel tractor. Three 50-ton units and a 10-ton roller were used on base and subbase. Subbase totaled 331,000 tons for both jobs; base totaled 151,000 tons.

Profits on low bids made with

One spread on two jobs

Single crew operates two bituminous pavers set to lay strips of different widths on interstate highway job

Good production on any kind of job depends not only on using good equipment, but also on using the equipment so that the over-all operation is smooth and steady. This is the kind of job that Armstrong & Armstrong, Roswell, N. Mex., turned out in grading and paving two connecting projects on the interstate highway system north of Socorro, N. Mex. The same crews handled work so well on the $1.8 million contracts on U. S. 60 and 85 that the two operations seemed like a huge single job.

Although the bids on both jobs were substantially below the engineers' estimates, the work turned in a profit for the contractor as well as a good stretch of road for the New Mexico State Highway Department. The first 7.935-mile divided-highway job was taken on a low bid of $1,811,361, which was more than $700,000 under the state's estimate. While the field crews were getting a start on the drainage, structures, and grading, the estimators sharpened their pencils and came up with a low bid of $1,834,739 on the adjacent 7.032-mile project. This was $420,000 below the state's estimate, but it gave the contractor the equivalent of a $3,646,100 job on 14.967 miles of highway.

Single-project benefits

Working the two contracts essentially as a single project, the contractor took full advantage of the benefits offered by the physical continuity of the two jobs. Overhead was cut to a minimum. The same men and equipment on the grading, structural, and paving teams moved smoothly from one job to the next without lost time or effort. A single trailer camp set up at a central location accommodated the mobile dwellings of workmen and their families for the duration of both jobs. The crews, from the supervisors on down, carried the benefits of their experience on the first job over to the second project.

A summary of a few of the major quantities gives an idea of the size of the projects.

	South Job	North Job
Bid price	$1,811,361	$1,834,739
Miles	7.935	7.032
Yards earthwork	995,000	1,287,000
Tons subbase	181,000	150,000
Tons base	84,000	67,000
Tons surfacing	53,000	41,000

In addition, the south contract included a double 14 × 14-foot box culvert interchange, two precast-concrete girder interchange bridges, and twin bridges spanning 213 feet across an arroyo. The northerly job had two major box culverts, two continuous concrete-slab bridges, and one interchange structure with a precast-girder deck.

Small spread handles dirt

While the bridge crews were rushing the structures to completion, a

The finished base is given a prime coat of MC-1 cutback asphalt at a rate of 0.4 gallon per square yard before hot-mix crews go to work. The 1,385-gallon Etnyre distributor is shooting 13 feet wide.

A single crew works two Barber-Greene finishers on the first course. One machine is run ahead, and then the crew switches to the second. The rig at left lays a 12-foot strip, the other a 13-foot width. Another 12-foot strip and raking of edges bring the width to 38 feet. This provides two 12-foot lanes, 10-foot outside and 4-foot inside shoulder.

The first pass over the newly laid mix is made by Buffalo-Springfield tandem 10-ton rollers. These are followed by a rubber-tire roller that provides a kneading effect and another steel-wheel rig that removes irregularities. Another 1½-inch surface course completes the job.

A Cat DW21 scraper picks up a load of material with help from a D9 pusher in a borrow pit that supplied much of the material for one of the jobs.

A Chevrolet truck with tank trailer applies water to borrow-pit material. Plenty of water was needed to bring the moisture content to optimum in this dry area. Prewatering saved extra work on the fill.

relatively small grading spread tackled the big job of moving more than two million cubic yards of dirt. Five scrapers, handling the bulk of the earthwork, were push-loaded by tractors in the cuts and borrow pits. Much of the material, especially on the northerly job, came out of borrow pits.

On one long haul from a borrow pit, the scrapers got an assist from a shovel and five end-dump earthmovers. This spread delivered some 400,000 yards of borrow, with hauls ranging from ¾ mile to 1½ miles.

In this semi-arid area, a great deal of water was needed to meet the compaction requirements. The contractor found it was advantageous to add as much water as possible in the borrow pits. As the scrapers worked the pits, the water trucks followed to wet down the newly exposed surface. The loading and spreading operations provided enough manipulation to mix the water and soil thoroughly.

As the scrapers spread their loads on the fill in lifts not exceeding 8 inches, a motor grader shaped the lift and a tractor with sheepsfoot roller began the compaction. A tractor-drawn 50-ton rubber-tire roller helped in the final compaction. Little or no manipulation of the soil on the embankment was required, and only enough water was added to compensate for loss by evaporation.

With each of the two roadways graded to a 50-foot top, and the median ranging from 16 to 60 feet, the job at times looked more like a runway grading project than highway work. On the completed grading section, the contractor placed an 8-inch course of subbase in two lifts that covered the entire width of the grade. A single 4-inch course of base material prepared the section for surfacing.

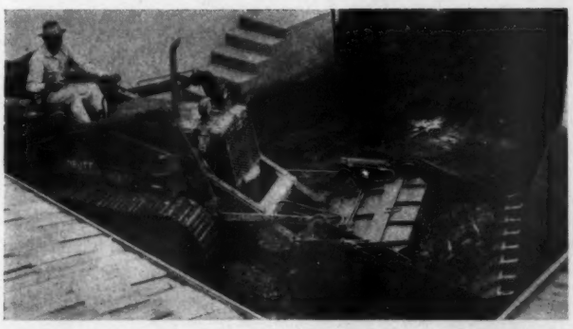
Base and subbase

Minus 2-inch crushed gravel for subbase was produced in a pit near the job. The crushing rig, fed with a scraper and tractor-dozer, also produced the minus 1-inch base-course material, as well as the sand and gravel for surfacing and for the concrete structures. Hired trucks hauled the sand and gravel to the batch plant and the base and subbase materials to the roadway.

The base and subbase materials were dumped from the trucks and spread to grade by a motor grader.

(*Continued on next page*)

HOW A CLAM-ACTION 4-IN-1 *obsoletes "straight bucket" rigs* ...ON JOBS LIKE THESE!



In quarters too narrow to maneuver, simply use the 4-In-1's clamshell action. You can load loose materials without moving the tractor with a fast, one-gulp clam-fill. Even on jobs like clean-up, you get the advantages of a big-capacity outfit; practically eliminate the need for costly hand labor. Move the "machine-selector" lever with 2-finger ease, to get clamshell, or any other 4-In-1 action! Fessenden and Co., El Curito, Calif., owns this TD-9 4-In-1!

Back-dragging with clamshell action, this TD-9 4-In-1 dredges silt from under a new bridge while a big boom-type clamshell is forced to stand idle in the background. The operator can also use back-drag action along with powerful Skid-Shovel excavating action to speed this job in tough digging. "The 4-In-1 is the best money-saver the county has," states Art Hahn, Colfax County, Nebraska, commissioner. "For ditch clean-up or culvert work, you can't beat it."

Grading with back-drag motion, this TD-9 4-In-1 is shaping a bank ahead of landscaping and paving around a new filling station. "The 4-In-1 can cut such a fine grade we don't need to follow-up with a grader," reports Ray Sims, for Meridian Pavers, Seattle, Washington. "It digs and loads faster than any comparable unit, takes out concrete slab, enables us to take on work an ordinary loader can't handle."

Try versatile International Drott 4-In-1 clamshell action from back-dragging to grading or excavating—to clean-up in tight quarters or for speedy stockpile loading. Then try super powerful 4-In-1 pry-over-shoe break-out action. Lift the clam lip (hydraulically) and see what big-capacity dozing you command—with 4-In-1 dozer action. Prove to yourself that 4-In-1 clamshell action obsoletes any old-fashioned "straight bucket" loader on the market. See your International Drott Distributor for a demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

For more facts, use Reader-Reply Card opposite page 18 and circle No. 305

A load of bituminous concrete is dumped into the hopper of the Barber-Greene finisher by a GMC dump truck. This finisher is set to lay a 13-foot-wide strip for the first 1½-inch course.

(*Continued from preceding page*)

Initial compaction was provided by 9 and 11-wheel rollers pulled by a wheel tractor. Final rolling of all courses was done by three 50-ton rollers and a 10-ton 3-wheel steel roller.

The finished base was primed with an application of 0.4 gallon per square yard of MC-1 cutback asphalt applied by a distributor. This surface was tacked with a fog coat of 85 to 100-penetration asphalt ahead of the bituminous surfacing.

Bituminous paving

Two courses of bituminous concrete were applied to the base. Both were 1½ inches thick. The first course was laid 38 feet wide on each roadway to provide a 10-foot outside shoulder and 4-foot inside shoulder in addition to two 12-foot travel lanes. The second lift of surfacing was laid 24 feet wide for the travel lanes, and the edges were raked out on a slope to cover a total width of about 26 feet.

To produce the hot-mix, Armstrong set up an asphalt plant rated at approximately 170 tph. A tractor-dozer pushed the aggregates to a belt conveyor, which carried them to the oil-fired dryer. The hot elevator carried the dry materials to the gradation and proportioning unit, and from there, calibrated quantities were delivered by conveyor to the continuous pugmill.

Asphalt cement was delivered by truck from refineries in Big Spring, Texas, and Artesia, N. Mex., to the 22,000-gallon storage tanks of the plant. A hot-oil heater kept the storage tanks and plant units heated. The usual mix contained ¾-inch maximum aggregate and 6 per cent asphalt.

Two engines powered the plant. One of these drove the pugmill and attached accessories through a gear drive, while the second powered the blower and a generator supplying electric power for the other plant units.

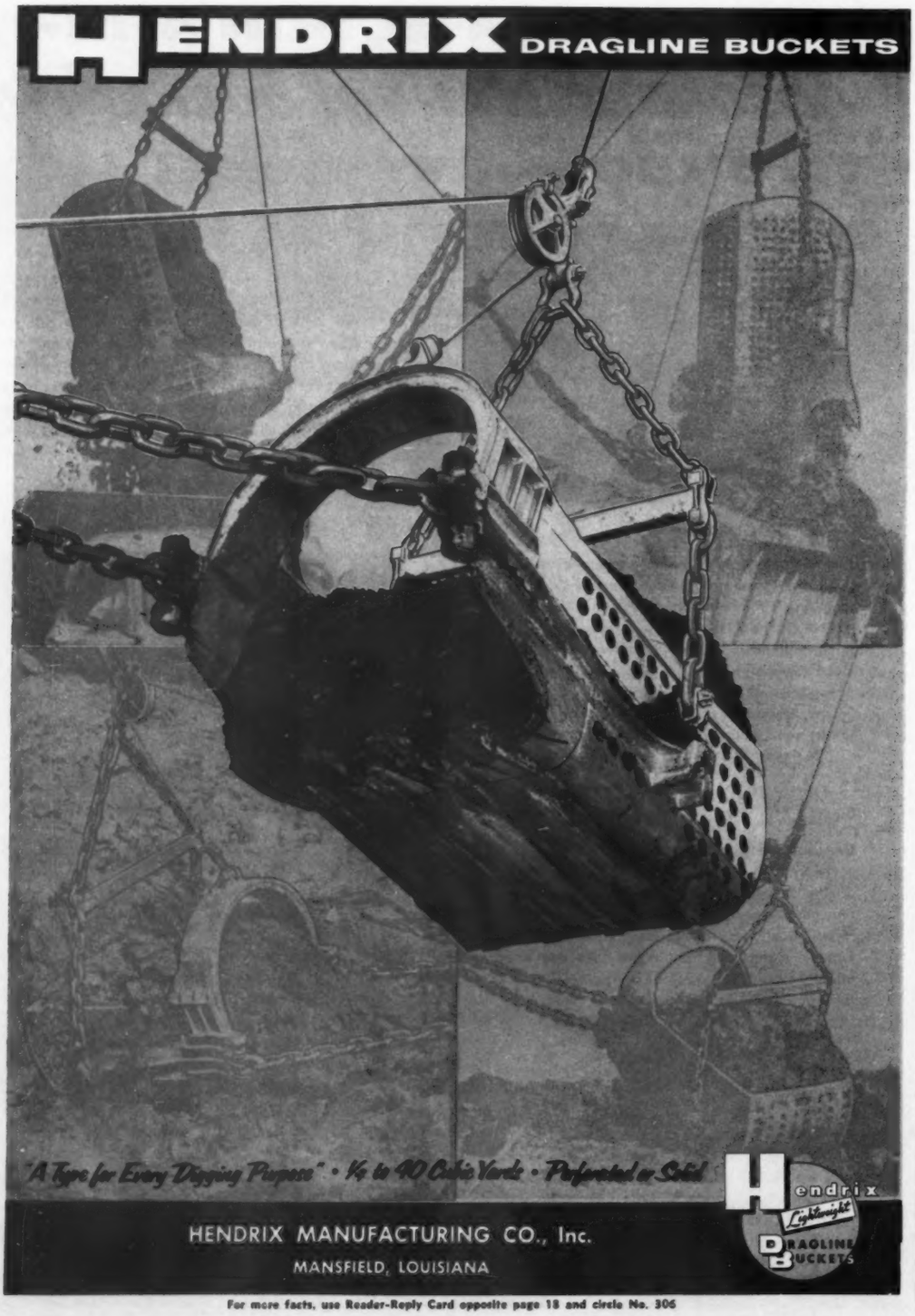
Equipment on this job

- Three Cat DW21 scrapers
- Two Euclid S18 scrapers
- Allis-Chalmers HD-21 tractor
- Cat D8 and D9 tractors
- Northwest 80D shovel
- Five Euclid end-dumps
- Cat No. 12 motor grader
- Allis-Chalmers HD-20 tractor with Gebhard sheepsfoot roller
- Pioneer 47V duplex crusher
- Tampo 9 and 11-wheel rollers pulled by Minneapolis-Moline tractors
- Miller & Smith 50-ton roller
- Huber 10-ton 3-wheel steel roller
- Etnyre distributor
- Pioneer Model 101 asphalt plant
- Pioneer No. 381 oil-fired dryer
- Childers C150 hot-oil heater
- Two GM 6-71 engines
- Murphy 30-ton truck scale
- Two Barber-Greene finishers
- Buffalo-Springfield tandem rollers
- Bros 9-wheel rubber-tire roller
- Three Smith transit mixers on International trucks
- Engineered Equipment batch plant
- Michigan 75A tractor shovel
- Miller & Smith 320-barrel silo
- Motorola mobile radio system
- Ottawa Hydra-Hammer

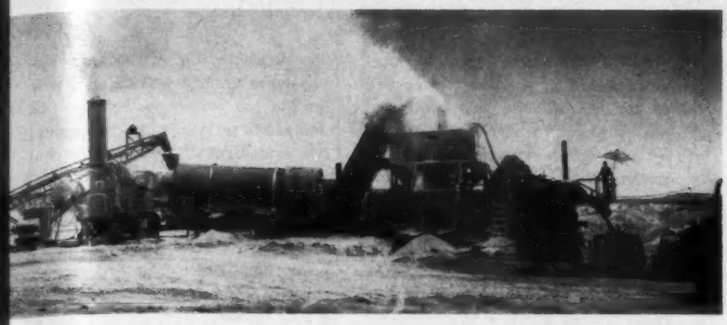
All loads were weighed on a 30-ton truck scale as they left the plant.

Use two pavers

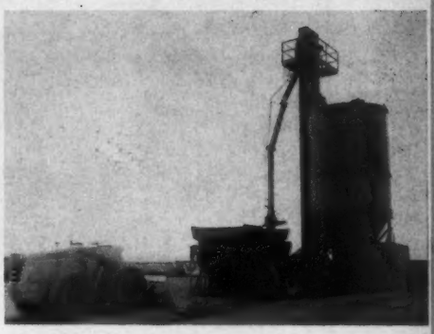
On the first course of the paving, two paver-finishers were used, one on each adjacent lane. One of the rigs was set to lay a 13-foot-wide strip while the other laid a 12-foot strip. The combination of two 12-foot strips and a 13-foot strip with the outer edges raked out on a slope made a


HENDRIX DRAGLINE BUCKETS
"A Type for Every Digging Purpose" • ½ to 90 Cubic Yards • Perforated or Solid
Hendrix Lightweight Dragline Buckets
HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 306



A Pioneer Model 101 turns out the 94,000 tons of asphaltic concrete required by both jobs. Aggregates go up the cold elevator at left, then through the oil-fired dryer, hot elevator, and gradation unit to the pugmill. Batches are being discharged at right.



Concrete for bridges, culverts, and miscellaneous uses is batched in this plant. A Michigan 75A tractor shovel feeds the bins of the Engineered Equipment Co. batcher. Cement is handled in the Miller & Smith cement silo and elevator. ►

total width of 38 feet for this first course.

While the two paver-finishers were operated almost side by side on adjacent strips, both were operated by the same crew. The crew moved one of the machines ahead a few loads and then switched back to the second machine, which they brought almost abreast of the first before making another switch. This kept them on the jump all the time, but the operation seemed to match the capacity of the rest of the setup.

The third strip of the first course of the pavement and both strips of the second course were put down by the machine set to lay to a 12-foot width.

A 10-ton tandem roller made the first pass behind the paver, and a 9-wheel self-propelled rubber-tire roller followed, giving a very deep kneading effect. Final rolling was done by a second tandem roller ballasted to 12 tons. This roller took out any marks or irregularities left by the other two and left the mix with the required density.

After the second course of paving was laid, the surface was sealed with an application of about .03 gallon per square yard of AE-3 emulsified asphalt. The emulsion was mixed with at least an equal amount of water and was applied as a spray by a water truck.

Shoulders were given an application of 0.3 gallon per square yard of 120 to 150-penetration asphalt with 30 pounds per square yard of rock chips spread on and rolled into the hot asphalt. The light-colored chips make a good contrast with the black roadway to define the limits of the driving lanes.

Set up concrete plant

To provide the concrete for the bridges and culverts, and for other uses on the job, the contractor set up a concrete batching plant and used three truck-mounted transit mixers to deliver the concrete. The plant was set low enough so that its bins could be fed by a tractor shovel. Bulk cement was received by truck and stored in a 320-barrel silo. A bucket elevator filled the silo and delivered cement to the batching plant. The weighed batches traveled by conveyor to the transit mixers.

This plant was set up at the site of the contractor's trailer camp, where

(*Continued on next page*)

How contractor solved rock problem relocating section of U.S. 50

Busy U.S. Highway 50 — which runs from the east coast to Kansas City — is being improved and widened wherever needed to meet the demands of today's traffic. On a new 3.3-mile section of the highway — between McArthur and Athens, Ohio — G. B. Herring and Son, Inc. moved 650,000 yds. of material to bring the route to grade.

As earthmoving got underway, Herring's crews ran into rock — a total of 150,000 yds. of it. To solve the problem, rock was blasted to boulder size, small enough to be handled by their 2½-yd. shovel. Contractor then needed a pair of fast haulers that could withstand the shock of loading heavy rocks, and the daily grind of traveling over rough terrain. Herring's choice — two LeTourneau-Westinghouse C Tournapulls® with 22-ton Rear-Dumps.

Here's how these rugged electric-control haulers performed:

Move 5,760 tons of rock daily

With kingpin electric power-steer, operators position haulers fast under the dipper. Rear-Dumps were filled with average 20-ton loads. Machines hauled material 450′ — partly down 33% grades — in 40 seconds. Completing eight 1000′ cycles per hour, and working two 9-hour shifts, the two Rear-Dumps moved an average 5,760 tons of rock daily.

"Built rugged to withstand heavy work"

Pleased with Tournapulls' performance, Superintendent Charles H. Porter says, "With the Rear-Dumps it was possible to haul this material at low cost. They're easy to load, and they work in close quarters. And these machines are very dependable . . . they're built rugged to withstand heavy work." Added Operator Bob Keirns, "You can't beat 'em for rock hauling. They're maneuverable, and dump easy."

▲ Shovel operator doesn't have to take it slow and easy when loading boulders into Rear-Dumps. Slanting walls of all-steel body, and 3-layer bottom, beat shock-load problems. Heaviest materials deflect off sloping sides . . . quickly build up a shock-cushion in bottom.

Loaded with rock at top of hill, Tournapull haulers travel safely down this 33% grade to fill. Big multi-disc air brakes — providing 3,762 sq. in. of braking surface — give operators confidence to use high speeds in hilly or restricted quarters. ▼

See them in action

Why not enjoy the same low-cost hauling with L-W Tournapulls and Rear-Dumps on *your* projects? Let us show you these tools in action . . . you be the judge. Call or write for complete information on price, delivery, and the bonus interchangeability tools — scraper, bottom and side-dumps, flat-bed hauler, crane. Rear-Dumps are available in 3 sizes: 11, 22, and 35 tons.

CR-1817-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

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(Continued from preceding page)

Unusual but effective use is made of an Ottawa Hydra-Hammer for driving post holes for the guardrail fence. It drives a tapered template into the ground, then pulls it out so that a wood post can be inserted by workmen.

a well, drilled by the contractor, provided water for the concrete as well as for the trailers. The contractor also arranged to have a transformer set provide 120-volt current for the trailers. The water, electricity, and site were provided without charge for families of the 135 men on both jobs. Many smaller factors assisted in the smooth operation of this big project. Among them was the 6-unit mobile radio system, which kept supervisory personnel in touch with each other over the great distances the job covered. All of these units were installed in the pickups of the supervisors.

Another factor was the excellent tire service supplied by the Goodyear Tire & Rubber Co. A Goodyear "big-tire truck" and a service man were on the job continuously to provide immediate service for all pneumatic-tire equipment. The contractor paid for only the actual work done.

An unusual feature of the job was the use of an Ottawa Hydra-Hammer for punching out holes for guardrail posts. The Hydra-Hammer drove a tapered template into the ground at a post location, then pulled it out so that workmen could insert the wood post. This eliminated some hard digging in the well compacted shoulder material and also provided extra compaction of the ground around the post.

Personnel

Although the same crews worked on both projects, each of the jobs was under the personal supervision of a separate superintendent. On the southerly job, Clyde W. Rossow was superintendent; the northerly job was supervised by R. L. "Bob" Dever. Foremen of the several crews were Albert Sauls on grading, T. C. Carr on concrete construction, Emil Weinman on paving, L. D. Arnold and Paul Taylor in charge of the crushing, and Bill Roberts at the hot-mix plant.

Both projects were under supervision of the Deming District of the New Mexico State Highway Department. A. M. Morrison is district engineer and Leroy Copeland assistant district engineer. Field engineering on the jobs was handled by D. B. Flowers and L. A. St. Joer. The chief highway engineer for the department is L. D. Wilson. Deputy chief highway engineer in charge of construction is H. F. Leslie. THE END

NEW hustle
NEW muscle

NOW HUSKIER THAN EVER WITH EVEN BETTER PERFORMANCE TO MAKE YOU MORE READY-MIX PROFIT DOLLARS!

1959 CMC
TRANSCRETES

NEW HUSTLE . . . for still faster charging — quicker discharge! Timed tests under actual job conditions prove it! TRANSCRETE's improved blading design gives the fastest no-flash-back charging in the industry. Exclusive swing-out-hopper moves out of the way for quick controlled discharge of any slump concrete. *TRANSCRETES actually discharge 1½" slump concrete in less than 30 seconds per yard!* Discharge in a steady flow that fills 16" wide chute — best mixer made for putting specification mix in the forms fast.

NEW MUSCLE . . . weigh less — yet are actually 25% stronger! New, simplified, lower-center-of-gravity design and the use of stronger alloy steel throughout give TRANSCRETES *more* strength with *less* weight. You get *increased payload*, greater carrying capacity PLUS the most durable, maintenance-free truck mixer built in America.

Available with Separate Engine or Truck Engine Drive in all standard sizes to 7 yards mixing capacity.

WRITE FOR NEW FREE TRANSCRETE CATALOG

CONSTRUCTION MACHINERY CO.
WATERLOO, IOWA

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Soil-sampling procedures topic of Acker Drill book

The Acker Drill Co., Inc., has published a nontechnical booklet, "Basic Procedures of Soil Sampling", designed for builders, architects, and contractors desiring fundamental soil-sampling information. Part 1 of the booklet discusses preliminary or general survey sampling and covers hand-operated soil-sampling tools, hand probing, wash boring, power-auger borings, and geophysical exploration for general surveys.

Part 2 takes up detailed explorations and covers drive (dry) sampling and standard penetration tests for drive sampling in detailed explorations; undisturbed sampling for detailed explorations in-place, and with thin-wall-tube samplers, stationary-piston samplers, the Denison core barrel, and core drilling. Part 3 contains data on logs and records.

The well illustrated $1 booklet may be purchased from Acker Drill Co., Inc., P. O. Box 830, Scranton, Pa.

Brown moves offices

William A. Brown, consulting engineer, has moved his Washington, D. C., offices to larger quarters in his own building. The offices are now at 1606 20th St. N. W.

More men, rigs, methods battle New Jersey winter

The New Jersey State Highway Department has entered the winter season with expanded forces, improved equipment, and newly adopted techniques. Nearly 400 pieces of equipment have been converted to permit state-wide salt spreading as well as regular sanding operations; the department's own short-wave radio network has been expanded for the early relay of storm warnings to field forces and to permit rapid shifting of manpower and equipment during storms. The number of rigs and truck-mounted plows has been increased.

For the third consecutive year, the department has "backed up" special U. S. Weather Bureau forecasts with the Northeast Weather Service of Lexington, Mass., for around-the-clock forecasting service and special alerts during periods of rapid weather changes.

The department has 14,000 tons of rock salt stocked up, and 75,000 cubic yards of sand, cinders, and other gritty abrasives. Over 200 mobile radio units have been installed in snow-removal trucks. Personnel to man the 1,423 plows, spreaders, and complementary equipment now numbers more than 2,500. Privately owned trucks with plows, available to the department on an hour's notice, number 356.

Massachusetts requires engineers to register

The State of Massachusetts has passed a law making registration mandatory for professional engineers and land surveyors. Up to this time, Massachusetts was the only state, including Alaska, that permitted registration to be optional.

The Act permits out-of-state engineers to practice in Massachusetts, only if they are registered in that state; otherwise, their professional activities are limited to an aggregate of 30 days in one year, and then only if they are registered in a state having equal or higher requirements.

Persons working for consulting firms, corporations, or companies engaged in professional engineering do not have to hold individual registration, provided the work does not include approval of final designs and is done under the direct supervision of a person holding a certificate of registration.

100% anti-friction engine-to-wheel drive

gives you bonus push-power... top efficiency

Compared to other graders, Adams† heavy-duty machines deliver a greater proportion of engine-power to tandem wheels. An Adams gives you this bonus work-power because all gears and shafts in transmission, drive, and tandems turn on anti-friction bearings.

Push bigger loads . . . faster

Because the Adams' drive has roller- and ball-bearings throughout, very little of its horsepower is lost thru friction. More thrust is made available for pushing bigger loads . . . for blading deeper . . . for working faster. Furthermore, with an anti-friction drive, your graders' fuel-cost per unit of work done is correspondingly lower. Finally, longer bearing life cuts maintenance expense and downtime for repairs.

Transmission delivers maximum torque

The Adams transmission provides more power-speed combinations than other graders . . . 15 speeds (with optional creeper gears) . . . so you can do every grading operation at fastest practical rate. At each speed, transmission delivers maximum torque, because all gears and shafts turn on anti-friction bearings. It is fully constant-mesh . . . gears are always engaged for fast, easy gear-shifts without clashing. Crown-shaved helical gears mate precisely . . . run continuously in oil . . . do not "howl" . . . give extra-long life.

Rear-axle carries no weight

In heavy-duty Adams graders (80 to 190 hp), the main rear axles are full-floating . . . they carry no weight. Instead, full rear-end weight of the grader is borne by sturdy axle carriers, consisting of two concentric tubular-shaped, steel housings—one inside the other. Driving axles are housed in the hollow center of these axle carriers, and are mounted on anti-friction bearings. Their only function is to transmit push-power. They are fully protected from severe shocks and stresses of rough ground . . . secure against breakage and undue wear.

Tandems oscillate at will, on the two pairs of axle carriers. Even in roughest terrain, grader keeps all four tandem wheels on the ground . . . driving, pushing, working all the time.

Ask for a demonstration

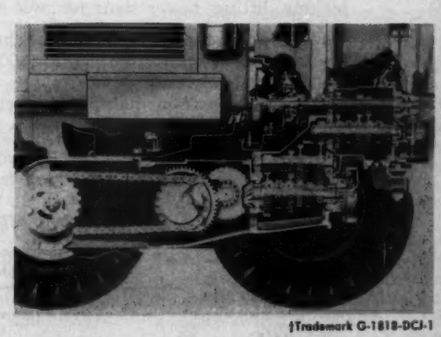
See how Adams' 15* speeds, with power delivered thru 100% anti-friction drive, give these machines *bonus* push-power . . . a capacity for work no other grader can match. Let us explain how an Adams saves you money on fuel and repairs . . . how it can keep producing for you week-in and week-out. 7 models, 60 to 190 hp. Choice of General Motors or Cummins diesel engines on 6 larger models. Call or write for all the facts, and a demonstration.

190-hp Adams 660 blades gravel base on 13½-mile shoulder-widening and blacktopping of Minnesota State Highway 56 — between Taopi and its junction with Route 63. Contractor is Osmundson Brothers Co., Adams, Minn. Partner Sigurd Osmundson reports excellent work-output from the grader . . . says "This '660' has been a very satisfactory machine. It has a quiet transmission, which I like . . . and good balance between its horsepower and weight. The extra power really makes a difference when you're rolling a big windrow."

**135 and 190-hp* POWER-*Flow® Models provide infinite number of power-speed combinations (to 27.4 mph) thru torque converter. 60-hp Model 220 has 9 speeds forward, including optional creeper gears . . . best in its class.*

All gears and shafts in the Adams transmission turn on ball-, needle-, roller-, and tapered-roller-bearings.

Main rear axles are mounted on anti-friction bearings, and carry no grader weight. Instead, rear-end weight is supported on concentric, tubular axle carriers. Inner axle carriers are bolted to tandems; outer carriers to final drive housing. Thus, tandems can oscillate freely — without putting stress on main axles. 100% anti-friction drive increases available work-power, reduces operating costs.



†Trademark G-1818-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Reader-Reply Card opposite page 18 and circle No. 309

Versatile fork-lifts do number of jobs at prestress plant

One of a pair of Hyster TC200 fork-lifts handle steel girder forms, using a special truss arrangement. In this case, the 10-ton fork-lift is moving a form from one bed to another. Generally, these forms are temporarily stored before being reassembled for a new pour.

Two 10-ton fork-lifts do everything but mix the concrete at a smooth-running prestress plant in Dallas, Texas.

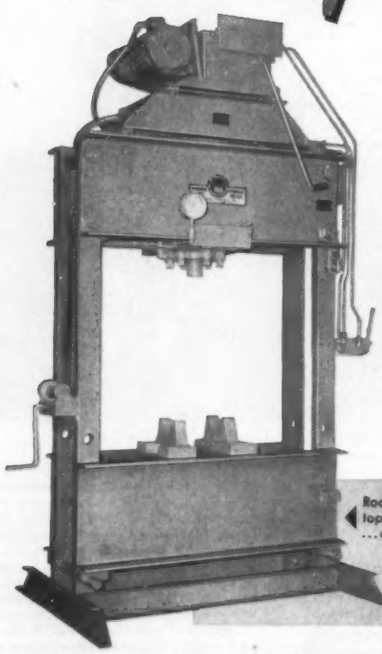
At Span, Inc.'s plant, two fork-lifts string the cables, handle 70-foot-long steel forms, and carry and place concrete. Working together, they move the 34,000-pound girders from the storage area to pole trailers. Their lifting force is even used to tension the half-dozen strands in wall panels produced at the yard.

Like many prestressing organizations, Span, Inc., is a young company. It was formed in August of 1956, and in January of the following year its first plant at Carrollton, Texas, was in production. Under the leadership of W. B. Morris, 32-year-old president of the firm, and Dan Waters, 28-year-old vice president, the company expanded rapidly. By June, 1957, the Dallas plant was turning out girders. Both plants were designed and built by company engineers. The company's production was further increased in the spring of 1957, when it acquired a previously built plant in Houston.

With the growing demand for concrete girders, prestressed piles, and wall panels, the two-year-old company expected to do a $2 million volume of business in 1958. About 70 per cent of the work is taken up by highway bridges, while the remainder

Young men growing with the young and growing field of prestressing are the officers of Span, Inc. W. B. Morris, right, is the 32-year-old president. Dan Waters, 28, is vice president.

A Rodgers Shop Press is BEST for YOU!

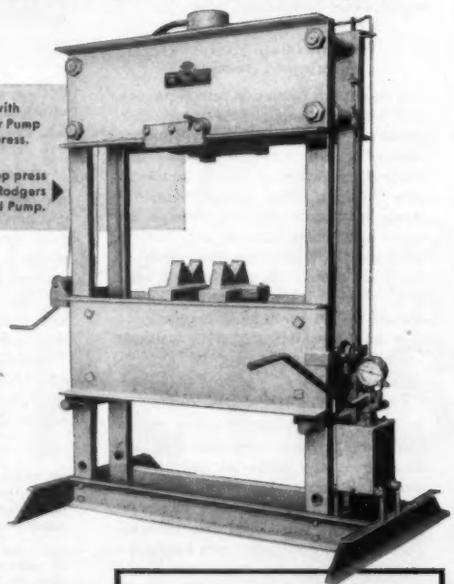


Rodgers 100 ton shop press with top mounted Greenlee Power Pump ... cylinder travels width of press.

Rodgers 100 ton shop press with Rodgers 2 speed Hand Pump.

HERE'S WHY:

- **LONGEST RAM TRAVEL** with maximum hydraulic power throughout entire stroke.
- **REMOVABLE CYLINDER** for independent hydraulic power away from the press.
- **CYLINDER TRAVEL** full width of press, either way.
- **OPEN ENDS** allow long pieces to extend through sides of press.
- **EXTRA WIDE** inside work space to handle bigger jobs more easily.
- **GREATER STRENGTH** with heavy bar stock sides and pins—bearing blocks support bolster to give uniform distribution of pressure.



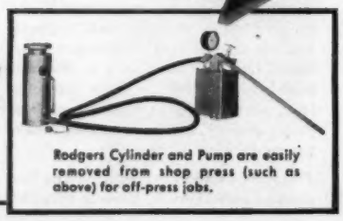
WHEN YOU INVEST in a shop press it is more important to compare performance than initial cost!

Rodgers Shop Presses are designed and built for the most versatile service, and longest trouble-free life. In the shop they handle hundreds of diversified jobs .... pressing, bending, straightening, assembling. For field work the Rodgers cylinder and pump are easily removed from the press, making an ideal portable power unit for jacking, lifting, heavy shaft removal and similar work.

Rodgers produces the most complete line of shop presses available—capacities from 60 to 400 tons—in varied standard models with power pumps, top mounted or placed at the side—or hand pumps with 2 or 3 speeds.

When you compare shop press performance and cost you will find a Rodgers is best for you, too. Ask your Rodgers Representative for complete details—or write us.

SEND FOR **NEW** CATALOG ...
It gives useful information and complete specifications.



Rodgers Cylinder and Pump are easily removed from shop press (such as above) for off-press jobs.

HYDRAULICS Rodgers KEEPS THE WORLD MOVING

RODGERS HYDRAULIC, Inc.

Pioneers In High Pressure Hydraulics Since 1932

7415 WALKER STREET • MINNEAPOLIS 26, MINNESOTA

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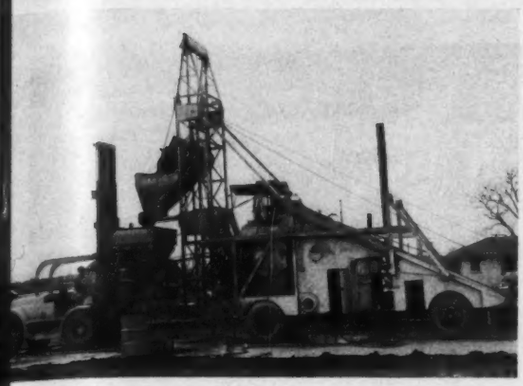
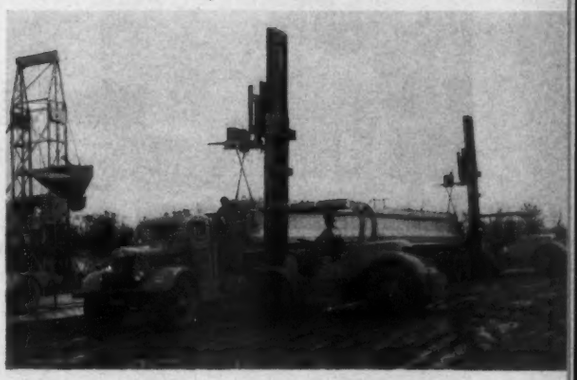


A fork-lift transports and places concrete, carrying it between this Wagner-mobile 2-yard mixer and the forms. The Hyster carries a special Gar-Bro 2-yard bucket. The mixer, using an elevating bucket to feed the bin, is supplied with dry batches from a nearby plant.



They handle girders, each using a cable draped around a steel section attached to the fork. This 34,000-pound, 69-foot girder is being loaded onto a Lufkin pole trailer pulled by a White truck.

goes into commercial buildings. Realizing the importance of doing one job well, the company produces only prestressed-concrete products.

At the Carrollton plant, three 420-foot beds turn out girders and double-tee beams. At the Dallas yard, Span has three 422-foot lines producing girders and prestressed wall panels. The four 420-foot beds at Houston supply bridge contractors in that area with girders and piling.

In the company's two years of operation, president Bill Morris has learned a lot in a hurry about the prestressing business. One part of the work needing close attention is quality control. According to Morris:

"Those girders have to be smooth and they have to be straight—all of them. There's no market for rejected girders, and they're awfully hard to bury.

"To keep quality high, we have our own inspectors. A man checks the batch-plant operation. Our inspector at the yard checks the forms before the concrete is poured, and he also breaks the test cylinders and inspects the finished girder."

The girders put out by the Dallas plant are proof that inspection keeps quality high. The smooth-running operation at Dallas is fairly typical of the prestressing done at the other two plants. During good weather, the 22-man crew can pull about 1,600 feet of girders off two 422-foot beds during a 50-hour week. A small crew of five men works on the third 422-foot bed to produce up to 4,500 square feet of wall panels in a week.

To produce the 35 to 70-foot girders varying from 30 to 40 inches in depth, the firm built two concrete casting beds with abutments capable of withstanding a total force of 400 tons. The beds are parallel to each other, with the anchor abutments and cable rack at one end and the tensioning abutment equipped with a single 400-ton hydraulic jack at the other. Steam for curing the girders is supplied by a 100-hp horizontal boiler.

The company prefers treated plywood to steel plates as a working surface for casting the girders. The plywood is low in initial cost, it is more adaptable to change, and it can

(*Continued on next page*)

Same features that make B Tournapull easiest-working scraper make it easiest to work on. Electric controls, for instance, speed entire operation. They also eliminate parts that cause most trouble in repair shop . . . such as linkages, long lines of pipe and hose, complicated pumps, valves, and seals.

shoptime-savers keep this scraper producing longer, steadier

Keeping B Tournapull "on the production line" is important, because it moves earth *fast*. Fullpak scraper is lower, wider, so dirt flow is nearly horizontal. Curved-top tailgate rolls dirt forward into apron and into all corners, for better "boiling" action, lower-void payloads.

When you "shop" for BIG scrapers, check carefully into features like ease of maintenance and repair. These 24 to 28-yd giants move so much yardage so fast that your production loss during downtime can be mighty expensive. If you're moving 40¢ dirt, for instance, just 4 hours of repair time on a 125-yd-an-hour scraper can cost you $200 in gross income.

That's why the top producer of all in the big scraper field — the LeTourneau-Westinghouse B Tournapull® with 28-yd Fullpak® scraper — is built for *quick* maintenance. First of all, it needs *fewer* repairs. Second, your crew can handle any needed work in *minimum* time . . . get your "B" back in production *fast*.

Parts easy to reach, remove

Dropping the "B's" transmission, for example, is a simple, easy job. The mechanic has lots of room, and doesn't have to disassemble other components. To get at the clutch, you pull the transmission, but not the engine. Axle and bull-gear assemblies are also quickly removable. Batteries are easy to check and replace. The entire dashboard switch panel lifts out. Rectifiers slide out.

Another big shoptime-saver on the B Tournapull is its kingpin steer. This modern steering mechanism alone eliminates literally dozens of trouble-causing parts. And Tournapull's electric-control system cuts maintenance time sharply. It eliminates extra sheaves, multiple-reversing cable lines, oil seals for pumps and jacks, high pressure lines, and complicated mechanical linkages.

Result: production at lowest-net-cost

These features add up to *shorter* downtime, and, therefore, *greater* production for you each season. Coupled with the fast-loading, steady-hauling, quick-spreading advantages of the B 'Pull† Fullpak, they assure you maximum production at lowest-net-cost. And that's the best formula yet devised for building profits!

Talk scraper ease-of-repair with your chief mechanic. Take him along when you look at the B Tournapull. Your LeTourneau-Westinghouse Distributor can give you full details.

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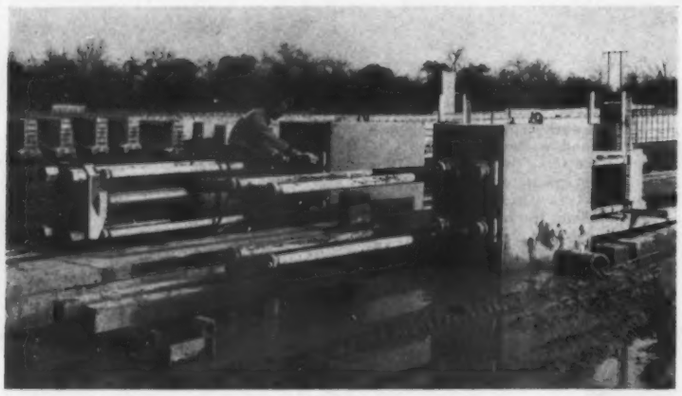

A Rodgers 400-ton hydraulic jack with 48-inch ram travel stretches the ⅜-inch cable at the tensioning abutments of the two 422-foot-long beds. The workman snugs bolts up against the abutment as the ram pushes the jacking rods forward.

Near the anchor abutments, a workman ties reinforcing stirrups of a girder to the tensioned strands. The steel side form for the girder slips into the space between the long 4×4 and the girder bottom.

This roller, hardfaced with Victoralloy, shows practically no wear after crushing 40 tons of rock hourly, 8 hours daily for 30 days.

HOW TO SAVE ON ROLLERS AND ROD

....*Use VICTOR Hardfacing*

Tracy Rock & Gravel Co., Tracy, Calif., crushes 40 tons of rock hourly, prolongs roller life on this rough work by rebuilding with ¼" VICTORALLOY #1 Bare Electric rod, 28" length. Says plant superintendent Albert Parker:

> "Victoralloy's ease of application and fast buildup mean a lot to us. There is no lost time as we use 28" length rod; when it burns down, we touch a new rod to the old one, and keep on welding without even lifting the helmet."

You, too, can save rod and increase working life of crusher rolls, screens, shovel teeth, tractor rollers and idlers, dredge pumps and many other parts subjected to abrasion and severe impact. Simply hardface with VICTORALLOY. It welds to manganese, steel or cast iron. You get all position hardfacing, exceptional arc stability, deposits free of porosity, fast application without slag interference. Try it. Order a supply from your VICTOR dealer TODAY.

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Victor Hardfacing Manual shows you right rod to use and how to apply it.
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37 VICTOR for hardfacing

VICTOR EQUIPMENT COMPANY
ALLOY ROD AND METAL DIVISION
13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

For more facts, use Reader-Reply Card opposite page 18 and circle No. 312

(Continued from preceding page)

be nailed down. The oil-treated plywood, with both sides being used, lasts as long as six months. It can then be cut up to form the headers for a girder. The plywood girder bottoms are nailed to 2×4's on either side of a concrete keyway on the casting bed.

Stringing and tensioning

The 10-ton fork-lifts are even used in stringing the ⅜-inch cable. The cable is fitted into slots at the end of a pipe that is carried by the fork-lift. The pipe extension permits the fork-lift to pull about 10 of the strands through at one time.

After the individual strands receive an initial tension of 500 pounds, a total stress of 14,000 pounds per strand is applied by a hydraulic jack. Heavy nuts on the four jacking rods make it possible for the abutment to carry the load so that the jack can be transferred to the adjoining bed.

The reinforcing stirrups, furnished bent to the job, are wired individually to the strands. Plywood bulkheads form the ends of the girders.

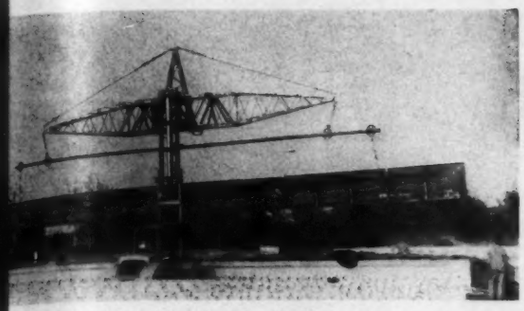
Long forms speed handling

Long steel forms, built to the length of the girder, can be conveniently shifted from one bed to the other. The forms can be built up with sections varying from 20 feet to 6 inches in length. Once sections have been bolted together to make one side of a girder, the steel form is handled as a unit.

With the help of a special truss attachment, the fork-lift strips a 70-foot-long form from one bed and speeds it around to the adjoining bed. While the fork-lift holds it, the form is quickly cleaned and oiled. Then it is lowered into a slot between the plywood bottom and 4×4's bolted to the concrete. One side of the top of the form is lined in by adjusting bolts secured to angle-iron frames. Wooden blocks wedge the bottom of the form into position.

Pouring concrete

The fork-lifts are in on the pour, too. Using a special 2-yard bucket, the fork-lifts pick up the concrete from a mobile mixer. The mixer re-



The fork-lift simplifies the job of stripping a 70-foot-long form. The forms, made by Mosher Steel Co., Dallas, can be adjusted for length in increments as small as 6 inches.

The dump lever on the Gar-Bro 2-yard bucket carried by the Hyster is tripped with a wire extension by the man beside the form. Workmen with Dreyer gasoline-engine-driven vibrators consolidate the concrete. Girders are poured in three lifts: bottom flange, web, and top flange.

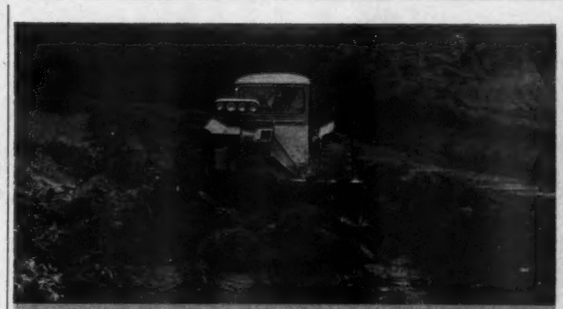
ceives dry batches from a commercial plant. The 6¾-sack mix is designed to give 5,000-pound concrete after 28 days.

The versatile fork-lifts used by Span, Inc., for a number of different jobs during the precasting and prestressing operation are Hyster TC200's. They handle the 70-foot-long steel forms and, using a special Gar-Bro 2-yard bucket, pick up concrete from a Wagnermobile mixer, carry it to the forms, and chute it into place. Two of the fork-lifts combine to lift the girders and carry them to storage or load them onto Lufkin pole trailers pulled by White trucks. The rigs also string the cables, and tension the strands in the wall panels produced at the yard.

Union Wire Rope, Roebling, and Colorado Fuel & Iron strands are used in the prestressed girders and wall panels. Reinforcing stirrups are furnished and bent by Peden Iron & Steel Co., Inc., Houston, and The Lofland Co., Dallas. A Rodgers 400-ton hydraulic jack is used for stressing. Steel forms used at the yard are made by Mosher Steel Co., Dallas. Concrete is consolidated by Dreyer vibrators, and a Williams & Davis 100-hp horizontal boiler supplies steam for curing the concrete.

Leaving the mixer, the fork-lifts go directly to the girder to chute the concrete to the forms. Three vibrators driven by gasoline engines follow the pour as the work moves down the line. The first lift of concrete fills the bottom of the girder; the second brings the concrete to the top of the web; and the third completes the girder. It takes about 3½ hours to pour the 56 cubic yards in one bed. The entire operation—from the stringing of cable to the pouring of the girder—takes about 12 hours.

(*Continued on page 88*)



PIONEERS ROADWAYS

STRIPS BLACKTOP

How you can speed dozing jobs ...cut non-productive costs

To get a work combination that's ready for profitable *action* anywhere ... anytime ... check the 210 hp LeTourneau-Westinghouse Tournatractor®. This rubber-tired tractor can drive job-to-job at a moment's notice. Operator just flips instant-shift lever and he's on his way — over highways or cross-country. Big, low-pressure tires do no damage to pavement, bridges, or RR tracks.

Handles wide variety of jobs

Equipped with bulldozer or Angledozer® blade, versatile Tournatractor does pioneering, ditching, backsloping ... levels and maintains dumps and fills ... strips blacktop ... speeds through dozens of other clean-up and maintenance jobs. Also, Tournatractor's power and maneuverability make it an excellent pusher. And it can be used effectively as a pull-type scraper prime-mover. Use its speed and maneuverability, also, to pull Rooters, Sheep's Foot rollers, and other heavy equipment.

Simple, safe operation

With electric push-button controls grouped handily in front of operator, he can keep his eyes on the ground. And, sitting up front, operator can see where he's going, what he's doing — for sure, safe control at all times. Big, heavy-duty air brakes on all four wheels provide 940 square inches of braking surface on each wheel. That's more braking surface *per wheel* than most comparable units have *on the entire machine*. Operator can effectively use all of Tournatractor's speed and mobility with confidence and safety.

Costs less to maintain

With enclosed anti-friction drive and fewer moving parts, Tournatractor is better protected from wear — will give you higher efficiency through many more hard-working hours of continuous service.

Tournatractor has only 4 rubber-tired wheels compared to about 562 crawler track parts. In many materials, tires outwear tracks by as much as 2-to-1. In highly abrasive materials, tires give as much as 4 times more service than tracks. Also, with extensive oil enclosures, plus anti-friction bearings throughout, maintenance time is much less.

See Tournatractor in action

Why not investigate "work-and-run" Tournatractor's effectiveness for your projects? You'll be amazed at the speed and efficiency in which this rubber-tired tractor can handle scattered dozing and pusher assignments. We'll be glad to arrange a demonstration. Call or write for complete details. CT-1494-DC-1

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A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

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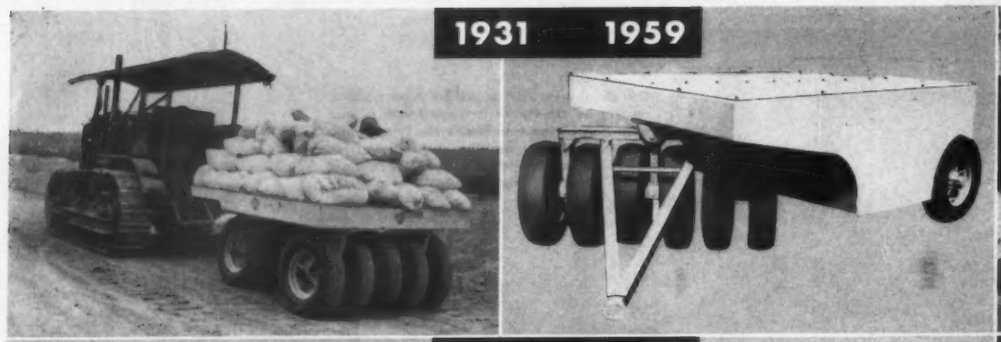
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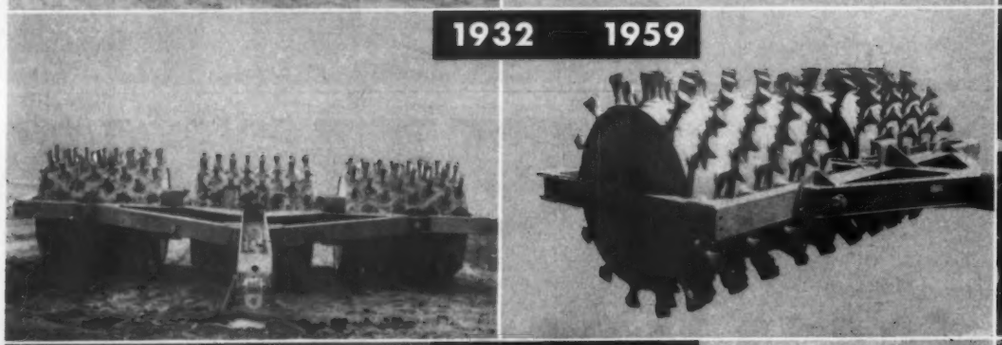
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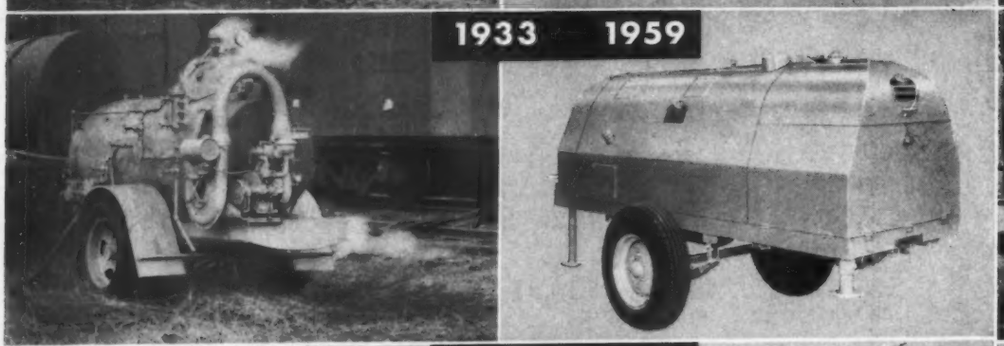
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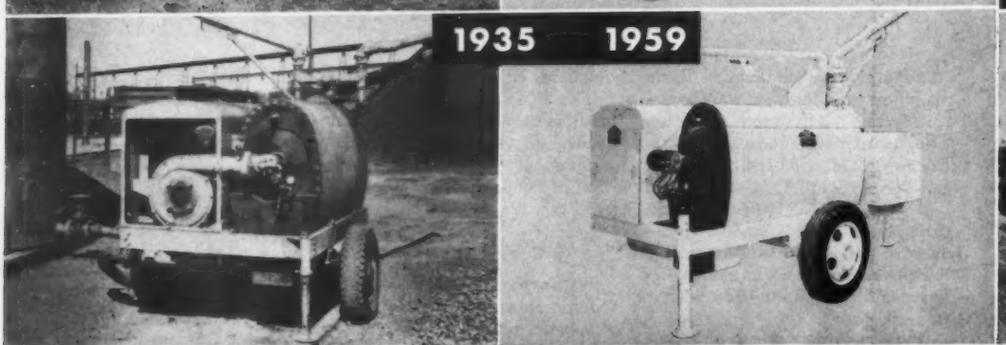
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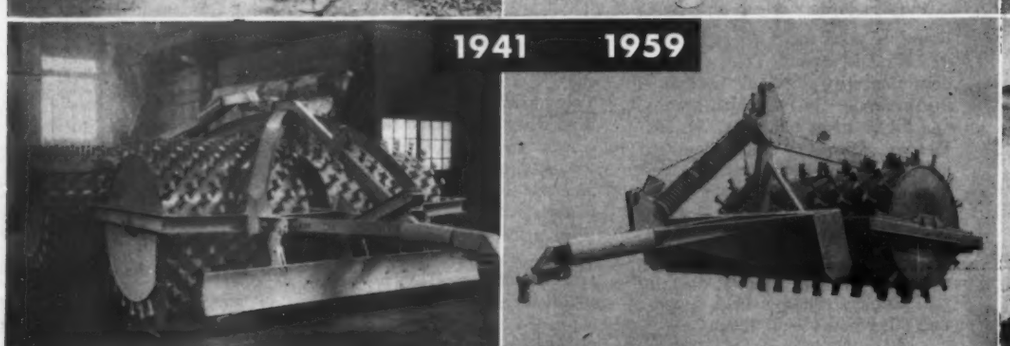
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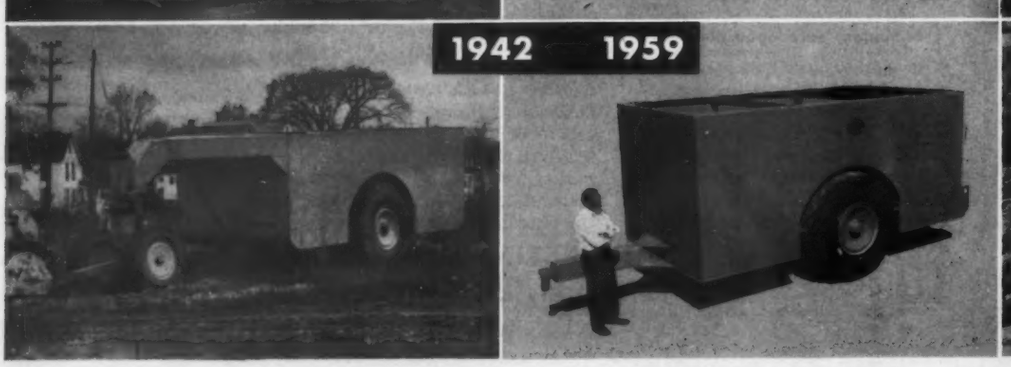
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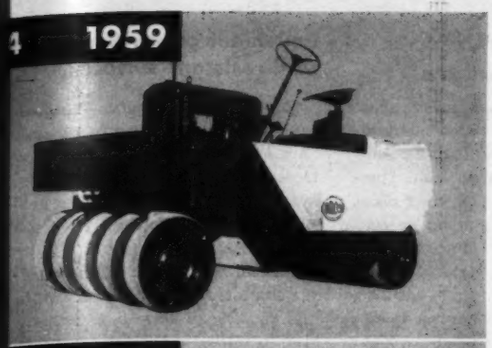
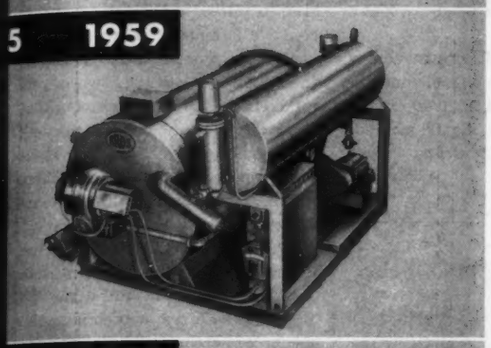
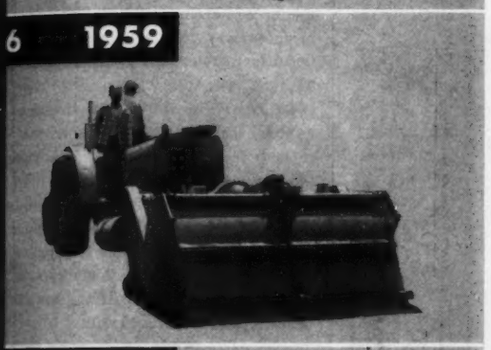
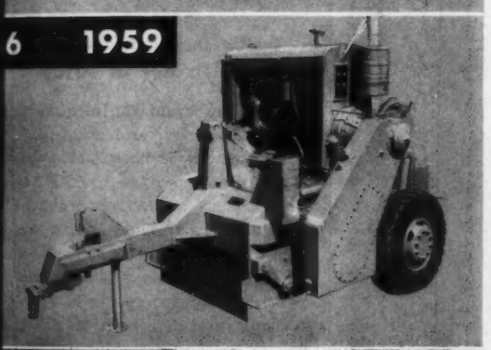
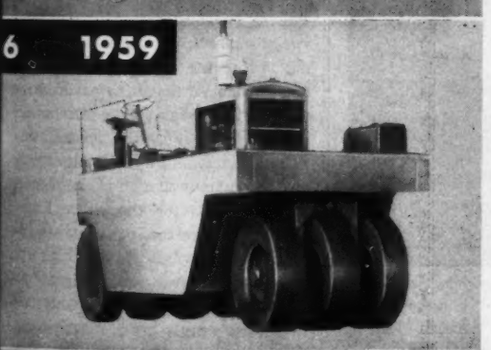
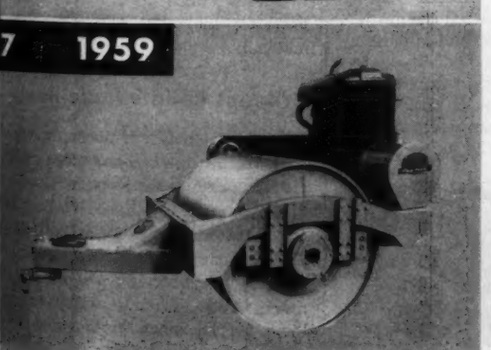












FOR 1959

IMPROVED PERFORMANCE

LIKE NEVER BEFORE

From These 12 BROS *Machines*

Since BROS introduced pneumatic tire rollers to the industry in 1931, constant effort has been made to improve design and performance. Now see how major improvements in the 1959 BROS Road Machinery line benefit you by increased productivity, reduced maintenance and safer operation.

BROS 9-13 TON PNEUMATIC TIRE ROLLERS (TOW-TYPE). Feature new super Hi-Strength axles; Dual seals per wheel of triple lip and triple groove type to protect bearings; heavy-duty cast hub caps with grease fittings and high capacity Timken tapered roller bearings with nut adjustment are important changes in the new BROS Tow-Type Pneumatic Tire Rollers . . . bringing you longer service life. In Straight and Wobble-Wheel design.

BROS TAMPING ROLLERS. New BROS Diamondfoot design with Relief Shank permits full compactive effort to be exerted at the bottom of the tamping foot instead of being dissipated by shank contact with the soil being rolled. This design minimizes rolling drag and material pick-up, too. Foot pressures range from 112 PSI to 823 PSI.

BROS ROLL-O-PACTORS. Models include 35-50-60 and 100-Ton capacities. New double-stop oscillation on Rocking Beams provide sure, positive wheel pitch stop in extreme pitched position. This design also prevents tire locking, sidewall wear and scuffing. And lower center of gravity minimizes tendency for roller sway or tipping.

BROS 3-10 TON SELF-PROPELLED PNEUMATIC TIRE ROLLER. 15 major improvements are incorporated in the new BROS SP-54B. 91″ over-all height provides lower center of gravity; "Velvet Drive" hydraulic reversing transmission and clutch; truck-type parking brake; sculptured sprockets provide full oscillation of all drive wheel pairs; quick, easy access to final drive; direct connection of steering cylinder to front-end bolster; individual brakes on all drive wheels; 95% more brake capacity; new body design; 40-gal. fuel tank; new hydraulic steering and infinite range of speeds between 0 and 20 MPH.

33-TON SELF-PROPELLED PNEUMATIC TIRE ROLLER for surface, base and grade. The BROS SP-730 features a new body design, reduced length and height; dual steering to permit accurate "tracking" on back-and-forth rolling, eliminating turn-arounds. Variable 35 to 150 lbs. air pressure permit compaction of all types and conditions of materials.

LEVEL BLADE ROLLER. For fill consolidation. New models are now available for the giant-weight BROS Diamondfoot Rollers for heavy work on dams, airports and super highways. Level Blade-Roller combinations, up to 798 PSI.

BROS PREPARATOR. For native materials and asphalt reduction. New rugged features in the heavy-duty in-place materials reducer includes ¾″ plate steel body; replaceable ⅜″ abrasion-resistant steel wear plates; power hydraulic windrow plow; screw-type leveling; sectionalized bang plates to increase material break-up to smaller sizes; 182 Net HP engine.

BROS ROTO-MIXER. Heavy-duty soil stabilizing, mixing and blending machine; large mixing tools work to 12″ standard depth (deeper depth on special order); solid steel drive shaft with simplified tool sockets; chain drive at ends of rotor shaft.

VIBRA-PACTOR. Heavy-weight vibratory roller with maximum compactive force of 15½ tons. One-quarter inch amplitude created by revolving off-center weights combines with 5-ton roller weight in providing maximum dynamic compactive forces. Range of 1100—1300 vibrations per minute.

HI-HEAT OIL HEATER. New sizes now permit precise matching of asphalt heating application to Hi-Heat Oil Heater thermal output, assuring highest production efficiency and economy. Operates below 15 PSI.

STEAM GENERATOR. Horsepower range now includes units of from 15 HP, 30 HP, 52 HP and 60 HP. Exclusive 2-pass design permits faster heat release and quicker steaming.

CIRCULATORS for heating and handling of bitumens. Exclusive BROS "Tar-Kettle" design surrounds materials with heat, producing more efficient heating and transfer of bitumens and other semi-solid materials.

Your nearest BROS Dealer has complete information on these products. Or write for latest sales brochure. Please specify particular product interest(s).

BROS

BROS
Incorporated
1057 Tenth Ave. S.E., Minneapolis 14, Minn.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 314

(*Continued from page 85*)

Curing

After the girders have been poured, they are covered with a layer of tarps and two layers of polyethylene plastic. The steam, which is piped into the bed, keeps the temperature of the girder at about 140 degrees. Recording thermometers at the end of each bed permit manual regulation of temperature.

According to specifications, forms cannot be stripped before 12 hours, and strands cannot be cut until the concrete has reached 4,000 pounds compressive strength. Depending on weather conditions, cutting is done from 24 to 40 hours after the pour. After the girders are moved by fork-lifts to a storage area, they are cured under wet mats until six days have elapsed from the time of the pour.

Prestressed panels

On a separate casting bed, Span, Inc., stresses, forms, and pours concrete panels. These are cast on plywood, with 4×4's forming the sides.

Perhaps the most unusual part of this operation is the use of a fork-lift to tension the half-dozen ⅜-inch strands. The machine lifts up on each strand, which runs through a snatch block anchored in concrete. A final tension of 14,000 pounds is obtained by measuring the 33-inch stretch in the strand. This simple method takes only about 10 minutes of the fork-lift's time, and saves buying expensive jacking equipment. Manufacturers of hydraulic jacks, however, are not too enthusiastic about the idea.

Girders compete with steel

Span's president is optimistic about the future demand for concrete girders, even though steel is now readily available. According to him, "prestressed girders will hold their place, and even gain some in bridge construction in Texas. We have the price down where concrete girders are competitive with steel. Concrete has a big advantage over steel, because it does not rust or corrode. This means lower maintenance costs.

"As for commercial construction, a roof made up of prestressed-concrete members is still slightly more expensive than steel. But in my opinion, concrete gives a better and more durable roof." THE END

Contractor for Glen Canyon Bridge: Kiewit-Judson Pacific-Murphy Corp. in a joint venture.

Bold New Bridge Spans the Mighty Colorado. At Glen Canyon, near the Arizona-Utah frontier, a great steel bridge will soon carry north-south traffic over the Colorado. The bridge is a brilliant feat of engineering. Anchored in sheer canyon walls far above the river, it is the country's highest and second-longest steel arch span.

Lower chords are tied into skewbacks on opposite sides of the canyon. As steelwork progressed from two directions toward the closure point, Bethlehem 1½-in. bridge strand was used to hold the arches in position. These strong wire cables were run to the upper chord members from big tieback towers, which themselves were securely guyed by Bethlehem strand. This system of tiebacks and guys proved an effective means of supporting the steel segments as they thrust out into space.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem Wire Rope

BETHLEHEM STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 815

Pavement performance; skid-resistant surfaces

"Pavement Performance—Methods for Evaluation", Bulletin 187, and "Applications of Skid-Resistant Surfaces to Highways", Bulletin 188, are available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Bulletin 187 contains seven papers, the first of which outlines the types and causes of failure in bituminous road surfaces and portland-cement concrete pavements. The next report deals with warning signs of distress in airport pavements. Two papers representing the U. S. Army Corps of Engineers report on investigations that included evaluation of rigid-pavement performance and failure criteria for flexible airfield pavements.

Other papers present data on a 9-year-old concrete pavement subjected to controlled full legal-load truck operations; appropriate elements for rating a pavement; and methods and results of a pavement performance inventory in Michigan. This bulletin costs $1.60.

Bulletin 188 details the method used by The Port of New York Authority to determine when a pavement should be resurfaced and discusses some of the special problems and materials involved. A second paper describes a procedure for applying a liquid modified resin binder and a grit cover to a prepared roadway surface. The price is 50 cents.

R. G. LeTourneau builds overland train for Army

An overland train, for transporting heavy cargo in areas lacking land-travel facilities, is being built by R. G. LeTourneau, Inc., Longview, Texas, under a $1,717,194 contract from the Army. The 450-foot-long train will have electric motors geared directly to the rims of all 52 wheels of its 12 units.

The train will consist of a lead control car and ten 4-wheel, individually powered trailers, each carrying 15 tons for a total cargo capacity of 150 tons. Although the main generating power car will be a separate unit of the train, the leading car will have a small power plant, as well as accommodations for a 6-man crew, controls for the entire train, and a complete communications system.

The 52 tubeless tires measure 10 feet high and 4 feet wide. Only the two front wheels are steered by the operator; the other 50 track automatically.

Grounds maintenance book

The maintenance of public, industrial, and institutional grounds is covered in "Grounds Maintenance Handbook", published by the F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y. Chapters discuss equipment maintenance and use; soil erosion; maintenance of roads and parking areas. The book may be purchased for $10.75 from the publisher.

A new job for a Gradall: spreading concrete dumped by a Blaw-Knox Multifoote paver with its 8-foot grading-blade attachment. The job is on the 52-foot-wide College Street Extension that forms part of a $129 million redevelopment program in New Haven, Conn.

Grading attachment spreads concrete base

By using the 8-foot grading-blade attachment on the end of a Gradall boom, Mariani Construction Co., Inc., New Haven, Conn., completed the concrete base courses for street extensions with a minimum of strain and manpower.

The Gradall attachment, generally used to finish graded roadway slope embankments, was used to spread the concrete mix for the 7-inch-thick base. The extensions, linking the city's streets with the Oak Street Connector's frontage roads, are part of New Haven's $129 million redevelopment program that will eliminate an unsightly slum area.

The Oak Street Connector, now called the relocation of State Route 34, will be a 6-lane mile-long depressed highway that will feed traffic from an interchange of the new Connecticut Turnpike into downtown New Haven. Mariani was awarded the first two contracts, one for constructing about half the Connector and one for a record-breaking 3-span plate-girder bridge having a 379-foot main span.

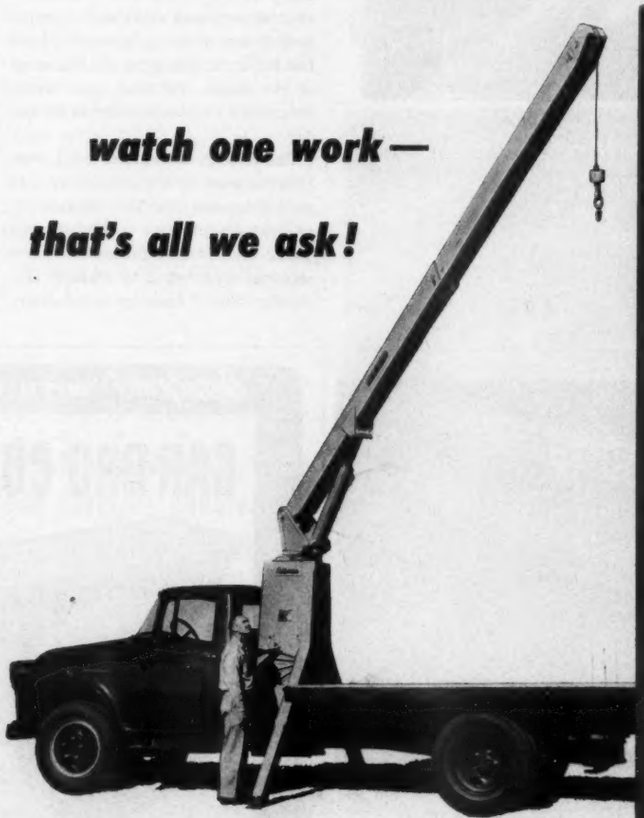
The contractor used a Blaw-Knox Multifoote single-drum paver turning out the concrete for the unreinforced base slab. As the paving machine moved forward, dumping concrete batches between the Blaw-Knox 8-inch forms, the Gradall spread the mix to the desired thickness. Forms were set 1 inch into the subgrade to provide a 7-inch slab. The jointless slab varied in width to match the existing streets; it reached 52 feet for the College Street extension. Concrete placing was done for the entire extension width in a single pass, eliminating longitudinal joints.

After concrete was spread, a wooden transverse screed was manually pulled across and along the slab to form the desired roadway crown. The finished slab was cured by covering it with Sisalkraft paper. The concrete base of the extensions will be covered by a 1½-inch asphaltic-concrete binder course topped by a 1½-inch wearing surface.

Personnel

Frank Leone is the superintendent on the road contract and Frank Dini is the superintendent on the bridge, for Mariani Construction. John Zito is the general superintendent for the contractor. Leo J. Conaty is the district engineer for the Connecticut State Highway Department.

THE END



New Model 50
PITMAN HYDRA-LIFT

Words are words, but actual performance is the only thing that really counts. How fast can it lay pipe, load paving forms, set steel. Is there really a saving in time and labor. We've put the Model 50 to work on jobs like these and many others. Now, we'd like to prove to you what we found out. Why not fill out and mail the coupon below today. Let us send you literature, then arrange for a demonstration. No obligation on your part, and the savings could be tremendous.

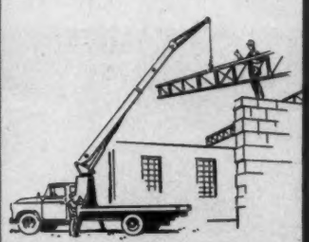
PITMAN Manufacturing Co. Grandview, Missouri
Please send me literature ☐
I am also interested in a demonstration ☐
Name _____
Company _____
Street _____
City _____ State _____

Pitman also manufactures:

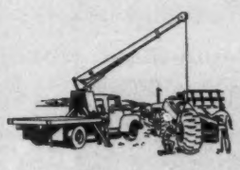
Hydra-Lift Model 60HB with Pitman Carrier

Hydra-Lift Model 60

PLENTY OF BED SPACE for these paving forms, which Model 50's swinging boom sets on and off the bed quickly, easily. Boom swings full 380°, can be carried either over the bed or over the cab.


HYDRAULIC TELESCOPING BOOM* is ideal for setting steel. Controls on each side of truck assure operator perfect visibility. Every operation of Model 50 is hydraulic, including placement of outriggers.
*Also available with fixed boom (12') or manually telescoping boom (12' to 20').

LIFTS UP TO 5000 LBS., yet requires only 25" behind truck cab. On a tractor-trailer, Model 50 loads the trailer, moves with the load to the job and is ready to string and lay the pipe.


NEVER IDLE—Once you own a Model 50 you'll find it's never idle, and every minute it's working it's saving you money. Model 50 is available for installation on any make truck, 1½ ton or larger, new or used.

Pitman
MANUFACTURING CO.
Grandview, Missouri

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 316

Picking up two 20-yard loads every six minutes on a figure-eight cycle, these Cat tractor-scrapers and push-loaders cut a 75-foot swath through one of the ridges crossing the right-of-way of a new 36-inch pipeline between Muscatine, Iowa, and Princeton, Ill. This kept pipeliners moving steadily through a difficult stretch.

Scrapers cut through ridges to keep pipeline job moving

Despite mud and saw-tooth ridges rising 40 to 50 feet high, ditching a 45-mile section of an 81-mile pipeline project was done at a rate of 3,000 feet per shift. When the job was clear of the ridges and mud, pipe laying progressed at one to three miles per day.

The difficult section extended from 10 miles west of Muscatine, Iowa, to near Princeton, Ill. The 36-inch-OD natural-gas pipeline is part of the Texas-Chicago loop for an expansion program undertaken by Natural Gas Pipeline Co. of America, a subsidiary of The Peoples Gas Light & Coke Co., Inc., Chicago.

Working across the high, dry farmlands of northern Illinois, the contractor, Contracting & Material Co., Inc., Evanston, Ill., faced a series of sharp ridges, usually in groups of two or three, that cover approximately half of a 35-mile stretch extending east from the bluffs above the Mississippi River.

Earthmoving, grading

Since no fittings were used in the pipeline, each hill had to be cut back

Save 50-75% on track repairs

Track-O-Matic Rail Rebuilder

A cost-cutting unit for contractors and equipment dealers, specifically designed to rebuild all sizes of tractor rails, quickly accurately, economically with track shoes on or off. Rebuilds both sides of the rail at the same time; rotating table also enables you to rebuild two rail edges simultaneously.

With completely automatic starting and stopping of arc at rail joints, one man can easily complete a ¼" build up of a large tractor rail in about 6 hours. Unit has dial control for track pitch, and variance control to compensate for uneven wear of pins and bushings. Flux easily removed. No other unit as fast, versatile or accurate. Send for complete details, today.

Multi-Matic Roller and Idler Rebuilder

A fast, high production 6 spindle Multi-Matic for rebuilding roller and idler flanges and tread surfaces. Handles 6 rollers completely, without removal from machine. Head tilts up or down 135° to handle all flanges. Available with single or dual welding head.

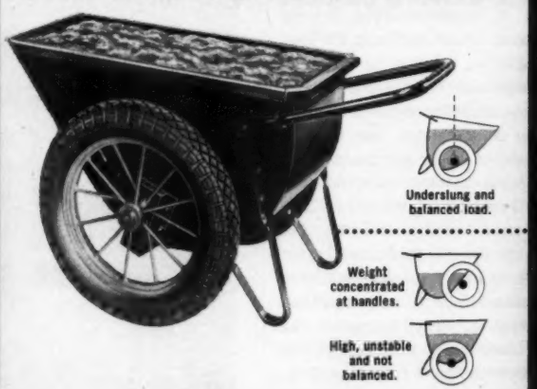
Single spindle Multi-Matic for smaller production requirements, will handle any tractor or shovel roller or idler. PRICE: $4250 f.o.b. Waukesha, Wis. (less power source)

AUTOMATIC WELDING CO.
AIRPORT ROAD
WAUKESHA, WISCONSIN • U.S.A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 317

designed WITH CONCRETE IN MIND

GAR-BRO CONCRETE CART



... makes a man want to deliver a full load!

When workmen race to work early just to get a Gar-Bro Cart there must be a difference. And Gar-Bro's balanced design makes that difference.

Gar-Bro Carts are designed specifically for heavy concrete ... are balanced when fully loaded ... are definitely lighter at the handles. They are easier to push, easier to maneuver, easier to control and pour concrete.

Here is a cart that is 25% lighter in weight than other carts; that will handle 30% more load with half the effort and yet it costs no more.

See your Gar-Bro dealer or write for catalog!

GAR-BRO MANUFACTURING CO., Los Angeles, Calif. • Peoria, Ill.
General Offices: 2415 East Washington Blvd., Los Angeles 21, Calif.

GAR-BRO CONCRETE HANDLING EQUIPMENT

THE WORLD'S MOST COMPLETE LINE

For more facts, use Reader-Reply Card opposite page 18 and circle No. 318

Grading spread makes 40-yard cycle in six minutes as crews hit difficult stretch on 81-mile job

As a Cleveland 320 ditcher opens a 7-foot-deep ditch, a Cat D7 tows a truck carrying four 40-foot 36-inch-OD pipe sections along the grade of the right-of-way. Stringing was done under a subcontract.

until the pipe could be laid with a 12-degree maximum bend per joint. A crawler tractor-scraper fleet was assigned to this 250,000-yard task. When conditions permitted, the tractors dozed the dirt aside, but in most cases, hauls were over 200 feet and the material had to be stockpiled on top of the ridges to preserve drainage. Since all of the material was to be replaced after the pipe had been laid, piling it high made fast dozing possible on cleanup.

The bulk of the dirt was moved by four tractor-scrapers pushed by four tractors. In about six minutes, each unit completed a 40-yard cycle—picking up a 20-yard load as it was pushed down the hill, climbing the opposite slope, dumping, returning, picking up a second load as it climbed the cut, and dumping this load on top of the ridge.

Grading crews, working two 10-hour shifts, cut a 75-foot-wide slot up the side of a ridge in less than a day. The crews worked through the 35-mile area, then returned to fill the cuts. Ahead of the grading crew, 26

(*Continued on next page*)

Now modernize your "Cat" Motor Graders with Rivinius Torque Steering Booster... Hydraulic Moldboard Shift

both for less than $550 with guaranteed performance

Put these cost-cutting Rivinius "twins" to work for you NOW at this new, amazingly low price! Less operator fatigue . . . less job time . . . better job quality mean more profit dollars from every job. Check these Rivinius features —

HYDRAULIC MOLDBOARD SHIFT
for fast, accurate control from inside cab

- Fits any "Cat" 'grader with sliding moldboard
- Can be teamed with Rivinius or other hydraulic power steering — operates off same pump
- Shifts at the touch of a hand — correct position for every application
- Moldboard stops and locks at any position operator wishes
- Functions whether 'grader is moving or stationary
- Moves through full distance of travel in less than 20 seconds

TORQUE STEERING BOOSTER
for easy wheel-turning, even when standing still

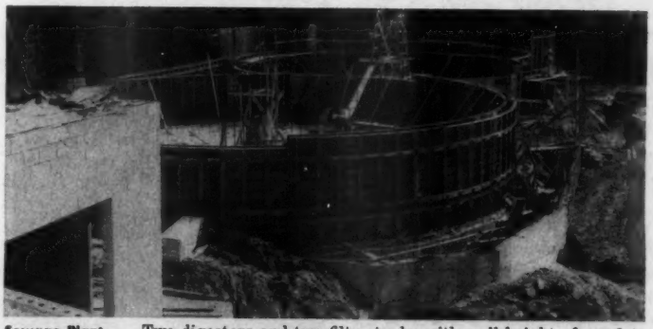
- Fits any "Cat" 'grader
- Small, compact, lightweight — but amazingly powerful
- Easy to install . . . trouble-free design . . . few moving parts
- Holds grader from drifting — even on inclines
- Frees operator's hands for handling blade and other controls
- Mounts high above dust, dirt, moisture

SEE YOUR CATERPILLAR DEALER NOW . . . OR WRITE:

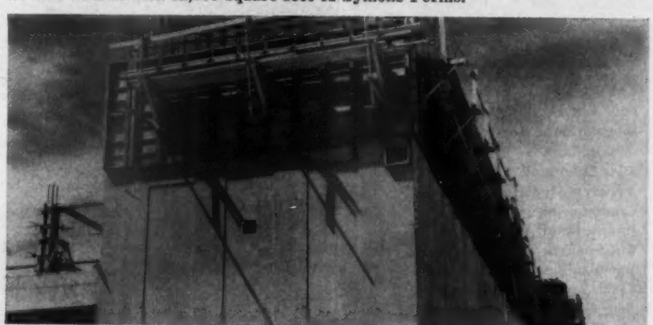
Rivinius, inc. EUREKA, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 319

WATER and SEWAGE PLANTS Constructed with Symons Forms



Sewage Plant . . . Two digestors and two filter tanks with wall heights from 8 to 23 feet formed with 12,000 square feet of Symons Forms.



60' High Bin Section . . . 8,500 square feet of Symons Forms were used on walls, slabs and stairways of sewage treatment plant.

10 Million Gallon Reservoir . . . Continuous pours of 50 ft. sections in heights up to 18 ft. Concrete was placed through pouring pockets.

Use of Symons Forms is not confined to one type of job. They can be used efficiently for almost any type of construction and on any height of wall. Symons Forms, Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. Information on Symons products and services sent FREE on request.

Symons CLAMP AND MFG. CO.

4251 Diversey Avenue **Dept. A-9** **Chicago 39, Illinois**

MORE **SAVINGS** FROM **SYMONS**

For more facts, use Reader-Reply Card opposite page 18 and circle No. 320

Welding progresses rapidly. Two Cat MD7 pipelayers, background, set the pipe for beads. At the bottom of the hill, Cat twin arc welders make a hot pass. In the foreground, finish welds are being made.

(*Continued from preceding page*)

men and a tractor cleared the 75-foot right-of-way. The crews also cut and stacked corn for the farmers to fulfill a contract requirement.

Pipe stringing

Stringing was subbed to J. L. Cox & Son, Inc., Raytown, Mo. Eight trucks, each loaded with four 40-foot pipe sections, made hauls up to 15 miles in the western part of the job and considerably longer ones on the eastern end. One tractor towed the trucks up the soft grades along the right-of-way, and another tractor with sideboom unloaded the pipe.

Ditching moved at a nearly normal rate through the ridges. Once the grading was completed, three ditchers cut 3,000 feet per shift of ditch that measured 7 feet deep, 50 inches wide at the bottom, and 8 feet wide at the top.

Equipment on pipeline job

- Cat D7, D8, D9 tractors
- Four Cat No. 463 scrapers
- International TD-14 tractor with sideboom
- Two Cleveland 320 ditchers
- Buckeye 51 ditcher
- Crose boring machine
- International TD-24 tractor
- Bucyrus-Erie 30-B backhoe
- Bucyrus-Erie 30-B crane
- Cinch bending machine
- Two Cat MD7 pipelayers
- Lincoln 250-amp arc welders
- Cat D315 twin arc welders
- Perrault cleaning machine
- Perrault doping and wrapping machine
- Cat No. 583 pipelayers
- Allis-Chalmers HD-20 and HD-21 tractors with sideboom
- Rex pumps
- Cleveland backfiller
- Cat No. 12 motor grader

Striking almost due east, the line crossed a road about every mile. A backhoe opened a hole for the boring machine that, cradled by a tractor, punched a 42-inch casing under the roads. Most crossings were about 100 feet long.

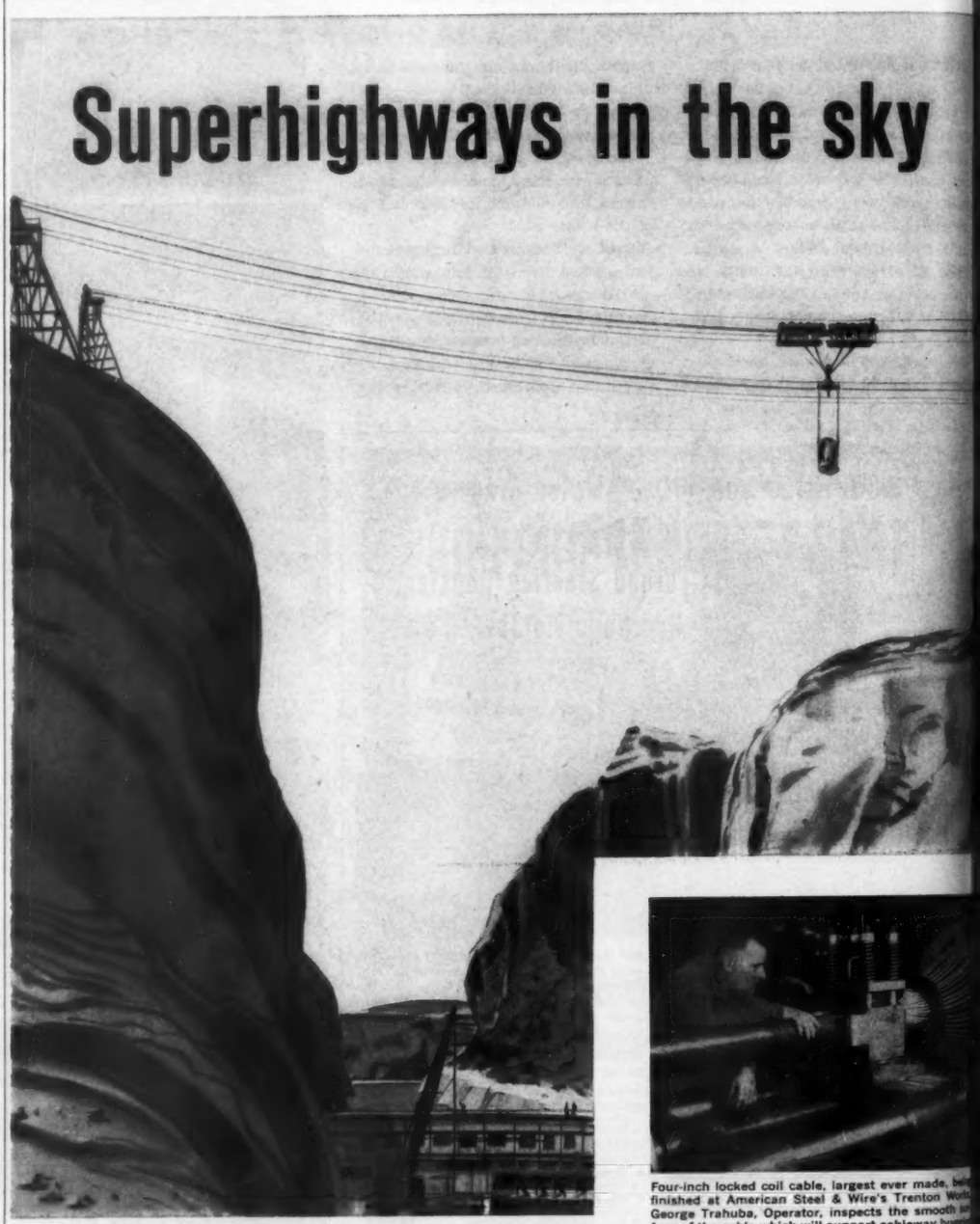
In the rough terrain, 12-degree bends had to be made constantly. In two days, a bending machine and two pipelayers bent 68 of 110 joints. Welding progressed rapidly: four 250-amp arc welders were used for beads and two twin arc welders on hot pass.

One cleaning machine, cradled by a pipelayer, and another pipelayer as catch-off worked on the pipe. Doping and wrapping were handled by another machine. A 3/32-inch coating of asphalt was used going into the compressor station, and coal tar was used coming out. One layer each of kraft paper and Fiberglas protect the pipe. Finished pipe was put back on the skids to cure at least overnight before being lowered in.

Pipe laying

The other pipelayers were broken into three spreads, one for lowering in and two for tie-ins. Each spread had three pipelayers and a tractor

Superhighways in the sky



Artist's conception of how the two Tiger Brand Cableways will be used in the construction of Glen Canyon Dam on the upper Colorado River. The higher cableway can pass over the lower one. Both can service all areas of the construction site.

GLEN CANYON DAM

700 FEET HIGH—1400 FEET LONG

Second highest dam in the United States, located on the Colorado River in northeastern Arizona.

Ranks with the greatest dam projects ever undertaken and is a key feature of the U. S. Bureau of Reclamation's $400-million Colorado River Storage Project.

- Reservoir capacity—28,040,000 acre feet with a lake 186 miles long.
- Power capacity—900,000 kw. in eight generators.
- Volume of concrete in dam proper—4,770,000 cu. yd.
- Contract for dam and power house—$108 million, awarded to Merritt Chapman & Scott Corp.
- Cableway contractor: Kiewit-Judson Pacific Murphy Co.

Four-inch locked coil cable, largest ever made, being finished at American Steel & Wire's Trenton Works. George Trahuba, Operator, inspects the smooth surface of the cable which will support cableway buggies capable of handling 50 tons of construction materials.

Perplexed porcupine, "Sticky," inspects the "broomed-out" length of the main cable made up of 312 steel wires. Over 145 tons of the cable have been made for the new dam's cableways.

with sideboom. Each of the tie-in crews had a twin arc welder.

Lowering in and tie-ins progressed slowly across the wet river bottoms, which extend two miles east and seven miles west of the Mississippi River below Muscatine. Mud banks and the high water table combined to impede work.

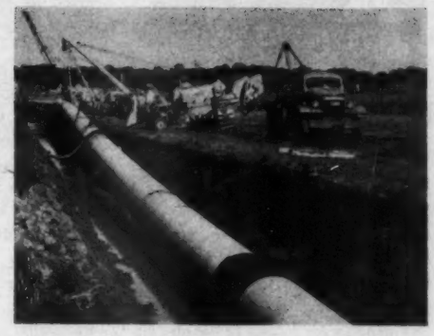
The soft banks crumbled as the pipelayers prepared to lower in, holding up operations until a crane with clamshell bucket could clear the ditch. A battery of pumps pulled water out of the ditch and sent it gushing back through cut field tile. Concrete saddles, weighing 6,300 pounds, held the buoyant pipe under the mud. About 50 saddles were used per day.

After the pipe was lowered in, a backfiller pulled the spoil bank over the pipe. A tractor worked with each tie-in crew, filling the ditch and cleaning up the right-of-way. Finish grading was handled by a motor grader.

Lake poses problem

The worst area for water was across a shallow lake—1,500 feet through water 1½ feet deep. A backhoe, working on 20-foot 8×8's, pulled sand from the ditch to build an elevated road across the lake for the pipelayers. Constant pumping and the use of a wellpoint system kept the lake drained so that tie-ins could be made under the railroad tracks. All of the equipment was moved across the river by barge.

The 36-inch-OD pipe is of two weights. One, weighing 166.17 pounds per foot with a wall thickness of .4375 inch, was used under road crossings. The other, weighing 130.9 pounds per foot with a .344-inch wall thickness, was used for the rest of the job. THE END



Lowering in was a tough job across 10 miles of Mississippi River bottom. The pipe, covered with a layer each of kraft paper and Fiberglas, is swung into the ditch by two Cat pipe layers.

Genoa, Italy, honors IRF

The city and county of Genoa, Italy, has awarded a solid gold medal and an $8,000 prize to the International Road Federation for outstanding contributions to the advancement of land transportation during the last four years. The award, in honor of Christopher Columbus, was presented at the close of the Third World Meeting of the IRF in Mexico City.

Previous winners have been Adm. Hyman Rickover, for contributions to sea transport; the International Civil Aviation Organization, for contributions to air transport; and the Bell Telephone Laboratories and the British Post Office, jointly, for contributions to the advancement of telecommunications.

ARBA issues three technical bulletins

The American Road Builders' Association has issued three new bulletins. "Soil-Cement for Farm-to-Market Roads in Alabama", Bulletin No. 234, contains a report on such roads in Cullman County. "Cement-Treated Subbases for Concrete Pavements", Bulletin No. 235, is a summary of projects, proposed projects, and recent laboratory research. The third bulletin, No. 236, covers "Virginia's Experiments with Lime Stabilization".

All three bulletins may be ordered for 50 cents each from the ARBA, World Center Bldg., Washington 6, D. C. ARBA members in good standing are entitled, upon request, to a free copy of each bulletin.

len Canyon cableways . . . largest ever made!

EN LOOK like midgets against the backdrop of Glen Canyon—but are building a giant-size dam on Colorado that will make a lake 186 s long.

len Canyon will be the country's nd highest dam. Its 700-foot height pped only by the 726-foot Hoover n. It will require 4,770,000 cu. yds. oncrete which will be poured from 50-ton-capacity cableways using u.-yd. buckets. This looks like an ss job, but these cableways really e speed. The contractor is aiming an unprecedented rate of 9,000 cu. daily—50% more than has previy been possible.

he track cable, or "main gut" as it alled by the dam builders, is the largest ever built. It is a 4-inch-diameter USS Tiger Brand Locked Coil Cable built at the Trenton, N. J., plant of American Steel & Wire. It has a strength of 880 tons, weighs 38 pounds per foot, and operates at a tension of 640,000 pounds. Tiger Brand operating ropes of 1½-inch diameter will also be used on this equipment to safely convey, raise and lower the loads into position.

At the dam, one of the two cableways stretches 2,050 feet between two traveling towers on opposite sides of the Colorado River. The second 1800-foot cableway connects two shorter towers allowing the higher span to pass over the top. Working together, the cableways can place 100-ton loads such as large steel penstock sections. They can handle work in any construction area at the dam.

Another Tiger Brand Cableway using a 3-inch cable 1,490 feet long is helping to build the Colorado River Bridge, the nation's highest and second longest steel arch span.

Tiger Brand Wire Rope is engineered to fit the job . . . engineered by one of the finest staffs in the country and backed by the basic research of the United States Steel Corporation. Next time you need wire rope, rig up with Tiger Brand. It will keep your machines on the job. Write American Steel & Wire, 614 Superior Avenue, N. W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

American Steel & Wire Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors United States Steel Export Company, Distributors Abroad

For more facts, use Reader-Reply Card opposite page 18 and circle No. 321

Avoid legal pitfalls

Income-tax estimates

THE PROBLEM: *A contractor reported income of nearly $90,000 for a taxable year, but had filed no estimate of tax to become payable. The next year his income was only $2,729.74, and the following year he paid no tax. Was he liable for a statutory penalty for failing to file an estimate on the ground that the nature of his business was such that income for a particular year could not be forecast?*

THE ANSWER: No. (Barnwell v. United States, 164 Fed. Supp. 430, decided by the United States District Court, Eastern District of South Carolina.)

But the court said that one who is penalized for such failure cannot be subjected to an additional penalty under another statute on a theory that he had substantially underestimated the tax payable for the year. In other words, one who files no estimate does not underestimate his tax.

The court recognized that plaintiff's occupation was such that his income naturally varied sharply each year. He must first submit bids and secure contracts. Even during construction, whether he will lose or profit is a matter of considerable guesswork. Extreme hazards were illustrated by his high income in one year and low income in the next.

But the court pointed out that changing conditions during a year permit filing of revised estimates. The court added that failure to file an estimate is not excusable because some agent of the taxpayer failed to draw his attention to the omission.

Use taxes on federal jobs

THE PROBLEM: *A contracting company was awarded several federal jobs involving construction on federal reservations. Each contract required the company to furnish the necessary materials and to perform the work required to complete the contract in accordance with specifications. Title to the material delivered to the site, or work in which material was incorporated, passed to the United States, after acceptance and approval by the government's representative, the Contracting Officer, and after a full or partial payment had been made to the contractor for the materials or work accepted. Material and workmanship rejected by the government had to be replaced or redone by the contractor without additional cost to the government. Was the company liable for state use tax on materials brought into the state for performance of the contract?*

THE ANSWER: Yes. (Robert E. McKee, General Contractor, Inc., v. Bureau of Revenue of New Mexico, 311 Pac. 2d 832, decided by the New Mexico Supreme Court.)

The court rejected the argument that the materials were, in effect, sold directly to the federal government.

Letter superseded bidding instructions

THE PROBLEM: *Bidding instructions stated that acceptance of a bid should not result in a contract until signing of the contract. But the owner—a municipal housing authority—sent a letter to the successful bidder accepting the bid and stating that the date for starting work should be three days thereafter, and that formal contract would be signed afterward. The bidder did not object nor refuse to proceed until signing of a contract. Under these circumstances, did the 300-day limit for performance run from the date to start work stated in the letter?*

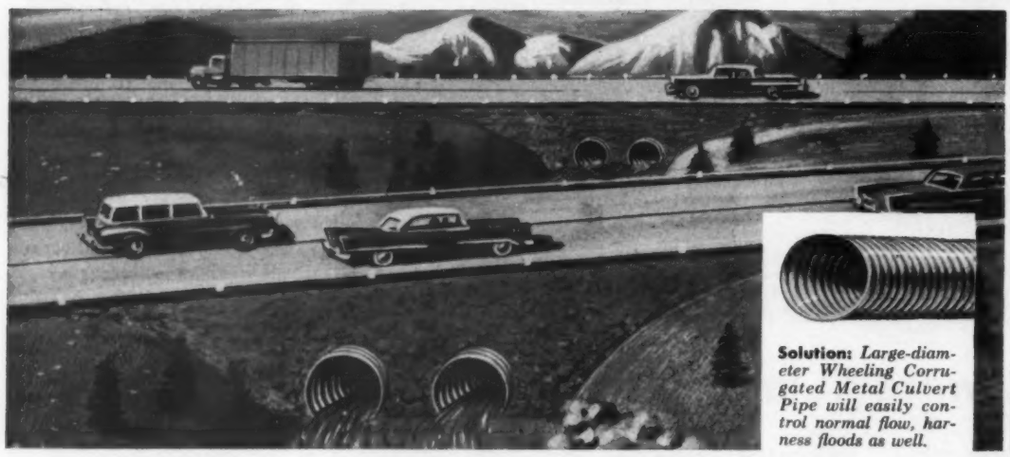
THE ANSWER: Yes. (George Colon Contracting Corp. v. Morrison, 16[illegible] N. Y. Supp. 2d 841, decided by the New York Supreme Court, Jefferson County, New York; decision being made final by the Appellate Division of the Supreme Court, 157 N. Y. Supp. 2d 927, 933 and 158 N. Y. Supp. 2d 797.)

The court decided that the 300 days allowed by the contract for completion ran from the date fixed in the letter, although the formal contract was not signed until more than a month afterward. However, the lawsuit principally involved the rights of the contractor under a supplemental agreement that extended the time for performance. It was decided that the contract had not been substantially completed within the extended time limit.

But the court strongly indicated that the contractor would have rightfully refused to proceed until a formal contract had been signed. The court cited decisions of the appellate courts of New York to the effect that a contractor can be under no liability or obligation under a contract that has not yet been formally signed and delivered as contemplated by his bid. Until then the successful bidder is not bound to organize his forces, bring in his equipment, or commence work.

The court mentioned a decision by the New York Court of Appeals—the highest court in the state—to the ef-

Problem: *How to tame the rushing water of this deep, fast-flowing stream. Flash floods from the nearby mountains are a constant threat here.*



Solution: *Large-diameter Wheeling Corrugated Metal Culvert Pipe will easily control normal flow, harness floods as well.*

How you can solve stubborn drainage problems — with Wheeling Metal Culvert Pipe

When road-builders come up against drainage problems like these, versatile Wheeling Culvert Pipe comes up with more solutions — at lower cost — than any other type of drainage pipe.

That's because Wheeling Metal Pipe combines flexibility under heavy traffic loads with durability over years of rugged service. It combines easy installation (unskilled labor and light field equipment can handle most jobs) with economical transportation (the long sections of pipe are nestable, won't crack or spall).

In short, when the problem is drainage, the solution is Wheeling Metal Culvert Pipe.

Wheeling Metal Culvert Pipe or Pipe Arch, in Copper-bearing Steel or Copper-bearing Pure Iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters. Contact your nearest Wheeling warehouse, culvert plant or sales office. Wheeling CorrugatingCompany, Wheeling, W. Va.

Small-diameter Wheeling Metal Pipe is ideal for farm and home drainage requirements.

Wheeling Pipe Arch—a wider type of metal pipe with comparatively flat bottom—is used where headroom is limited.

WHEELING CORRUGATING COMPANY - IT'S WHEELING STEEL

WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DES MOINES DETROIT HOUSTON KANSAS CITY LOUISVILLE MADISON MARTINS FERRY MINNEAPOLIS NEW ORLEANS NEW YORK PEORIA PHILADELPHIA RICHMOND ST. LOUIS.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 322

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

fect that when the state unduly delayed delivery of a contract after acceptance of a bid, the bidder could have withdrawn his proposal and recovered his deposit. But, on accepting the contract and proceeding to perform, the contractor could not collect for additional expense in performance caused by higher labor and material costs. (Belmar Contracting Company v. State, 135 N. E. 240.)

Sidewalk contractor loses

THE PROBLEM: *Unit prices were stated in a contract to install sidewalks, curbing, and gutters; 75 cents per cubic yard was allowed for "structural excavation". Structural excavation was defined by the contract as including "all operations incidental to the excavation of earth and rock, of whatever kind, or structures on the project". It was also agreed that, "as the full consideration for the performance" of the contract, the contractor should be paid "the contract unit bid price per item . . . for work actually performed". The contract also excluded pay for "extra work" not authorized in writing. There was no such authorization. The contractor claimed more than $3,000 as pay for removing old sidewalk. Was he entitled to it?*

THE ANSWER: No. (Huber & Rowland Construction Co. v. City of South Salt Lake, 323 Pac. 2d 258, decided by the Utah Supreme Court.)

The court said the contract should be read as classifying old sidewalk removal as structural excavation, because it was incredible that the parties overlooked that item in preparing 50 pages of specifications. On the other hand, if the sidewalk removal was an "extra", a claim was barred because it was not covered by written order. The court also mentioned that sanctioning the claim would "wreak havoc in competitive bidding".

Sub's surety liable

THE PROBLEM: *An Oregon statute requires that every public contract shall require the contractor to pay promptly "all persons supplying to such contractor labor or materials for the prosecution of the work". An electrical subcontractor on a public school building job failed to pay for supplies used in performing the subcontract, and the general contractor had to pay. Was the surety on the subcontractor's payment bond bound to reimburse the general contractor?*

THE ANSWER: Yes. (Wiley Co. v. Home Indemnity Co., 326 Pac. 2d 123, decided by the Oregon Supreme Court.)

Sub's employee fell into unguarded shaft

THE PROBLEM: *An Atlanta ordinance required contractors to place temporary railings or other protective devices around floor openings during construction. While supervising installation of plumbing for a subcontractor, plaintiff took a few steps backward and fell into an unguarded stairwell opening. He sued the contractor for damages, and the trial judge dismissed the suit on the ground that plaintiff's own carelessness in not looking to see what was behind him was the direct cause of his injury. Did the trial judge err in not permitting the jury to decide whether or not the contractor's violation of legal requirement for railing around the opening was the direct cause, and whether plaintiff's inattention was excusable under the circumstances?*

THE ANSWER: Yes. (Mosely v. Beers Construction Co., 102 So. 2d 645, decided by the Georgia Court of Appeals, Division No. 1.)

Custom cited as covering omission in contract

THE PROBLEM: *A subcontract to furnish crushed stone, for the prime contractor's use in constructing an Air Force base, was silent as to whether the stone should be measured in place—as contended by the prime contractor, whose contract with the government called for payment on that basis—or by loose truck measurement, as claimed by the subcontractor. Was the subcontractor entitled to collect on the latter measurement, on proving a custom that such measurement should control in the absence of special agreement to the contrary?*

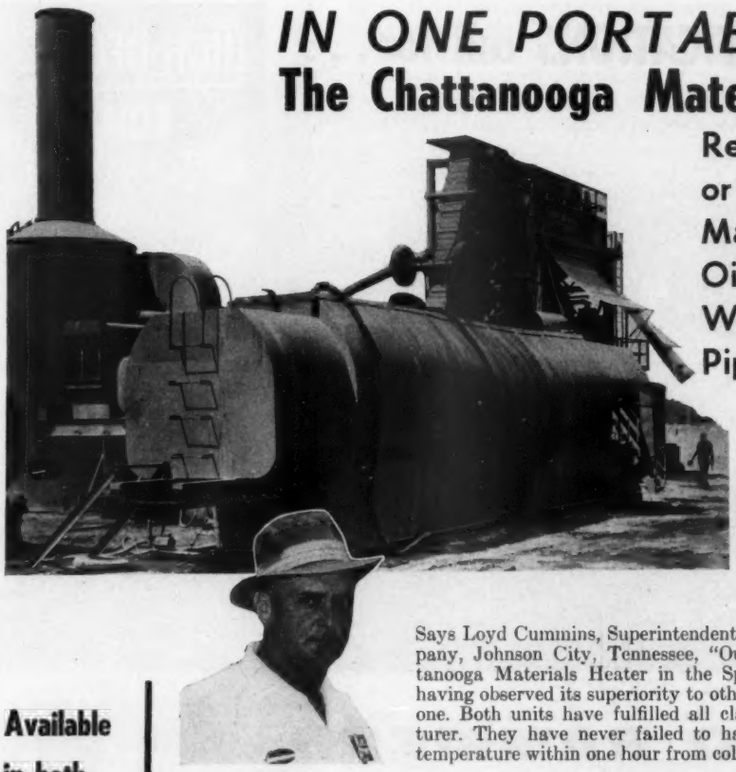
THE ANSWER: Yes. (Edward E. Morgan Co., Inc. v. United States, 230 Fed. 2d 896, decided by the United States Court of Appeals, Fifth Circuit, approving a judgment by the United States District Court, Western District of Texas.)

The Court of Appeals reasoned: (1) Because the subcontract was to be performed in Texas, it was governed by Texas law rather than by the law of Mississippi, where the subcontract was made. (2) Custom cannot be proved to contradict the

IN ONE PORTABLE UNIT

The Chattanooga Materials Heater

Replaces a Boiler or Oil Heater, Material Tanks, Oil Tanks, Water Tanks, Piping and Pumps!



"Operating temperature within one hour from cold start . . ."

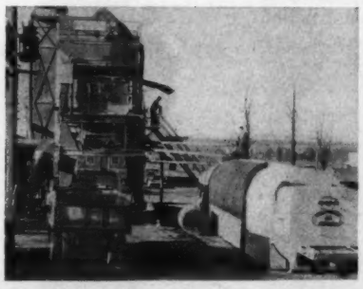
Says Loyd Cummins, Superintendent for the Unaka Paving Company, Johnson City, Tennessee, "Our company bought a Chattanooga Materials Heater in the Spring of 1955. A year later, having observed its superiority to other heaters, we bought another one. Both units have fulfilled all claims made by the manufacturer. They have never failed to have the asphalt at operating temperature within one hour from cold start.

"The portability and exceptionally low fuel consumption of the units have substantially reduced our operating costs.

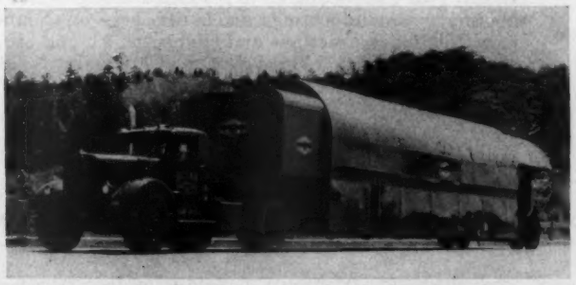
"In my opinion, the Chattanooga Materials Heater is years ahead in design. After fifteen years in the asphalt field, I have never seen a heater that compares with it. I would recommend it to any potential buyer of an asphalt heating unit."

Available in both OIL and STEAM Models

Are *you* that satisfied with your present set-up? Waste no more of your time and dollars—write us for complete details. And, incidentally, *the price is right!*



Completely automatic in operation, the unit is also easy to repair—no special tools or know-how needed.



Disconnect asphalt, fuel oil, water and electric lines, hook to a tractor, and the move to a new job site is made in one haul.

INDUSTRIAL BOILER CO., Inc. P.O. Box 9133, Chattanooga, Tennessee

For more facts, use Reader-Reply Card opposite page 18 and circle No. 323

terms of a contract, but under Texas law custom can be proved to presume intention of the parties on points as to which the contract is silent. (3) The subcontract should not be read as requiring measurement of the stone in place, merely because the prime contract called for payment of the prime contractor on that basis. This was so even though the subcontract specified that the work was to be done according to the prime-contract specifications and had to meet those specifications as to "screen analysis".

One of the circuit court judges disagreed with the court's decision, on the ground that the subcontractor had failed to prove his claim that there was such a custom in Texas concerning measurement of crushed stone.

Contractors' bonds for public works jobs

THE PROBLEM: *A California statute requires a public works contractor to give bond to pay for materials and work or labor of any kind furnished in performing a contract, and to pay amounts due under the Unemployment Insurance Act. Did a bond, given under this law by a school building contractor, make the surety liable for unpaid contributions to a health and welfare fund?*

THE ANSWER: No. (Bernarr v. Indemnity Insurance Co., 324 Pac. 2d 628, decided by the California District Court of Appeal, Second District.)

Workmen's compensation

THE PROBLEM: *A highway contractor's employee, regularly employed by the contractor, was sent home because bad weather had suspended work on a particular job. He was later summoned from his home to another distant point to help for a day in an emergency on another job. Returning home that evening, he was killed in an automobile accident. Was his widow entitled to workmen's compensation benefits on the theory that he was killed in the course of his employment duties?*

THE ANSWER: Yes. (Anderson Construction Co. v. Franklin, 315 Pac. 2d 785, decided by the Oklahoma Supreme Court.)

The general rule is that an injury suffered by an employee while on his way to or from his regular work does not arise out of and in the course of his employment. But the court decided that it does not apply where the employee sustains an accidental injury while going to or returning from his place of work to perform a special task at the specific request and direction of his employer and for the employer's benefit.

Extortionate union acts

THE PROBLEM: *A federal statute makes it a felony to obstruct, delay, or affect movement of any commodity in interstate commerce by robbery or extortion, or to attempt to conspire to do so. "Extortion" is defined as obtaining property by threat or force. Two contractors furnished bulldozers and tractor-scraper units, with operators, to the government for use in repairing a Mississippi River flood-control levee. No "swampers", to scout ahead of the bulldozers, were hired, needed, or desired, and the contractors rejected a labor union's demand that they be used. The union, through its business agent, delayed the contractors in the performance of their contracts. About 700 or more union members, employed in nearby industrial plants, were called out to obstruct use of the bulldozers unless swampers were hired. The business agent profanely threatened to ruin the business of one of the contractors. Did the union and its business agent violate the federal law?*

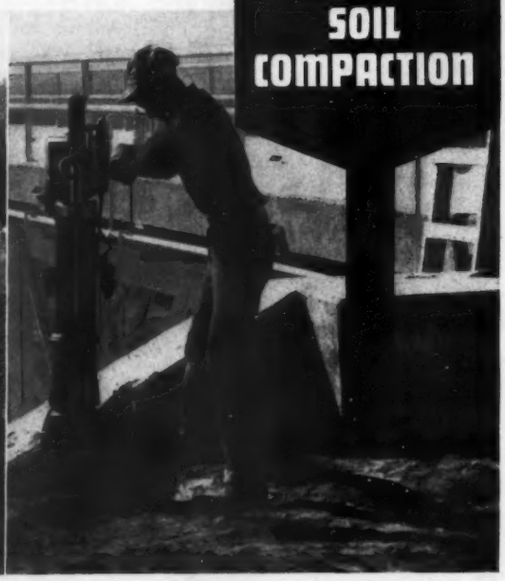
THE ANSWER: Yes. (United States v. Green, 246 Fed. 2d 155, decided by the United States Court of Appeals, Seventh Circuit.)

The court referred to a decision by the United States Supreme Court (United States v. Green, 350 U. S. 415), upholding the sufficiency of the indictment. That decision was to the effect that the statute prohibits conduct whereby a union and its representatives — through the use of threats of force, violence, and fear — attempt to obtain money from an employer in the form of wages for fictitious, unwanted services, even though the money is not sought for the immediate benefit of the parties indicted.

The Court of Appeals said that the defendants could not be regarded as having engaged in a permissible labor dispute as to union jurisdiction and as to how the contractors should perform their work. The federal labor laws do not protect unions or their officials in attempts to gain advantages through threats of force or violence.

And the court concluded that defendants' acts must be regarded as having interfered with interstate commerce, because the levee that was being repaired was a part of public works designed to permit river traffic to move safely.

Where SPECIFICATIONS call for . . .



BARCO RAMMERS are THE ANSWER!

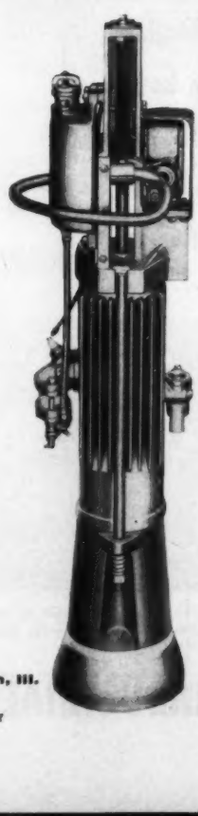
YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

THE KEY TO BETTER CONSTRUCTION—High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas — close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18″ trench backfill, using lifts up to 24″, the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.

Sold and Serviced by the Nation's Leading Distributors



PRODUCTS BACKED BY EXPERIENCE
BARCO
FOUNDED 1908

BARCO MANUFACTURING CO.
BARCO RAMMER
for High Degree Soil Compaction

5188 North Hough St., Barrington, Ill.
BARCO VIBRA-TAMP
for Granular Fill and Bituminous Surfacing

For more facts, use Reader-Reply Card opposite page 18 and circle No. 324

PRODUCTIVITY
Key to Profits '59

Product Parade of New equipment and materials

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Versatile new vehicle shown by Curtiss-Wright

A new on-and-off-highway vehicle, combining features of a light truck, tractor, and prime mover, was recently demonstrated by the South Bend Division of the Curtiss-Wright Corp.

Called the Unimog, the unit is available in three basic models, with payload ratings of 1, 1½, and 2 tons.

During the demonstration, the Unimog showed ability to pull 20 times its own weight, accomplish a 60-degree climb or 38-degree traverse with full payload, and travel at speeds ranging from 0.2 to 35 mph. Four power takeoffs permit the operation of more than 150 different accessories and implements.

The vehicle is designed for maximum mobility in cross-country operation—over obstacles and through sand, mud, or water.

For further information write to the South Bend Division, Curtiss-Wright Corp., Dept. C&E, South Bend, Ind., or use the Request Card at page 18. Circle No. 117.

Tractor shovel features multipurpose operation

The Yale & Towne Mfg. Co. announces the Trojan Model 124, a 4-wheel-drive tractor shovel with three interchangeable buckets: a 1½-yard general-utility bucket, a 1¼-yard heavy-material bucket, and a 2-yard light-material bucket. This new machine has a 10,000-pound lifting capacity.

The Model 124 is equipped with a planetary torque converter featuring a 3.5:1 torque ratio. The high traction differentials in the unit's planetary axles allow for the transfer of power in a wheel not achieving full traction to the opposite wheel. The machine's travel speed ranges from 3 to 21 mph in both forward and reverse.

According to the manufacturer, the Model 124 has a dumping clearance of 10 feet 3 inches under the hinge pin and 8 feet 4 inches under the bucket cutting edge.

For further information write to the Trojan Division, Yale & Towne Mfg. Co., Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 104.

Two new wheel-type units added to ditcher line

Two new wheel ditchers, the Models 772 and 773, have been added to the Barber-Greene line. The 772 digs to a maximum depth of 5 feet 6 inches; its crawler pads are 10 inches wide. The 773, which is identical in mechanical details, offers a wider crawler tread and either 14 or 16-inch-wide crawler pads.

On both units, the company's dual-range Hydra-Crowd hydraulic transmission eliminates all gear shifting for crowding speeds, which are offered in an infinite range from 0 to 28 fpm. Mechanical and hydraulic transmissions are located at the front of the machine for easy accessibility.

A new digging-wheel drive features a split drive shaft said to deliver power uniformly to both sides of the wheel.

For further information write to the Barber-Greene Co., Dept. C&E. 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 118.

The Fox River dual-purpose spreader, for de-icing in winter and highway seal-coating in summer, incorporates several new features. Designed to mount on any standard dump truck in 15 minutes, the unit is offered in four sizes, with capacities from 5 to 8 cubic yards heaped.

Sand spreader mounts on any standard dump

Designed for mounting on any standard dump truck in 15 minutes, the Fox River Tractor Co. sand spreader offers five new features:

1. An electrical control panel that permits the operator to regulate material from the dashboard without exposure to weather.
2. Replacing a mesh-type screen, a protective cover grid that is made in hinged sections so each section can be handled easily by one man.
3. An easy-working lever that adjusts the height of the spinner to regulate width of spread in four steps from 8 to 40 feet with most materials.
4. A detachable spinner shroud for easy storage.
5. An optional V-shaped baffle plate that can be mounted over the auger to ease load of especially heavy materials.

The spreader reportedly operates effectively at truck speeds from 5 to 40 mph.

For further information write to the Fox River Tractor Co., Road Machinery Division, Dept. C&E, 1020 N. Rankin St., Appleton, Wis., or use the Request Card at page 18. Circle No. 55.

Powerful paving breaker is medium-weight unit

A medium-weight paving breaker is announced by the Davey Compressor Co.

Known as the Davey-Holman Model SS-32, it is said to have an exceptionally high power-to-weight ratio, and to be suitable for all but the heaviest demolition jobs.

A special SS-32 feature is the complete housing by the cylinder of the entire valve mechanism. A single hat-shaped, short-travel main valve controls the high-speed piston. The handle is fitted with an outside-type trigger.

The SS-32 is 22½ inches long and has a net weight of 60 pounds. Bore is 2 inches, stroke 5 inches. The tool delivers 1,250 blows per minute.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 131.

Asphalt mixer offered in capacities to 3 tons

A new asphalt mixer said to produce a closely knit mix and uniformity throughout a batch is announced by the Bollard Asphalt Plant Division of Colonial Iron Works.

The mixer is of twin-shaft design with shanks and tips arranged for spiral run-around, and the high-chromium-alloy tips can be attached to the cast-steel shanks with 16 possible adjustments.

The gate is activated by a pneumatic cylinder under push-button control; can be operated with either air or steam; and reportedly will dump a load in four seconds.

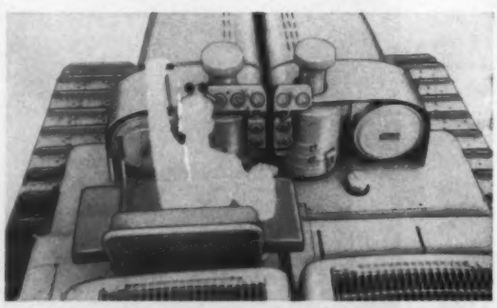
Each mixer is designed to handle batches 5 to 10 per cent in excess of its rated capacity. Mixers are constructed in batch capacities starting at 3,000 pounds and increasing in 1,000-pound increments to 6,000 pounds.

For further information write to the Bollard Asphalt Plant Division, Colonial Iron Works, Dept. C&E,

Tremendous power, quick maneuvering and on-the-go power shift cut valuable seconds from cycle times when the TC-12 is used for push-loading scrapers.

As a dozer, this Twin-powered Crawler provides unmatched work-ability because of its ease of handling, smooth push power and brute strength.

For heavy ripping work, you can count on unequalled drawbar pull and plenty of stability to do a really fast and thorough job.



With convenient, simplified controls, the TC-12 has no equal for operating ease—by keeping operator fatigue to a minimum, full shift efficiency can be maintained.

New Series EUCLI

Ever since the TC-12 was introduced, th
been no question about its top performance
—even on the toughest crawler jobs. Now wi
3 years of field experience on practically eve
of operation, major product improvements ma
new TC-12 better than ever.

Powered by two engines, there's a total of
horsepower delivered to the power train
separate Torqmatic Drives for each track. B
shoes and 8 rollers give the TC-12 good b
with or without heavy duty dozer blades and
mounted equipment. Bare weight of the trac
been increased to 67,000 lbs. as a result of
construction and more rugged components thro

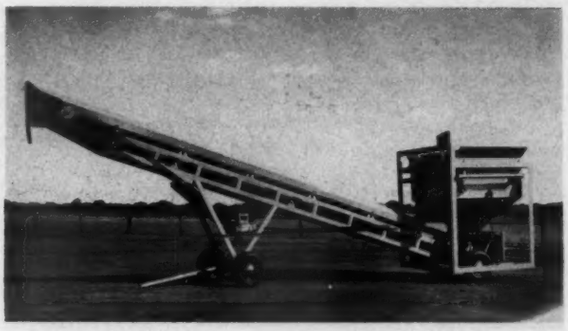
With independent track drives, there's no
track drag when turning—maneuverability
big TC-12 with its full power shift saves sec
every cycle whether you're push loading sc
dozing or pulling big equipment. And with
assembly, good design of component locati
equipment mountings, this "Euc" crawler p
easy accessibility for service and maintenanc

Have your Euclid dealer give you
facts on the new TC-12 . . . you'll fi
your best buy by far where big t
performance is needed.

EUCLID DIVISION of GENERAL MOTORS, CLEVELAND

17625 St. Clair Ave., Cleveland, Ohio, or use the Request Card that is bound in at page 18. Circle No. 10.

This improved 4-yard batching plant is designed for sack cement and can be fed with any front-end loader. One of the Ross Porta-Plant line, the unit also features a covered conveyor measuring 35 feet long and 24 inches wide, has a 4-ply belt and sealed bearing rollers, and operates at a 15-degree incline. Power is supplied by a 9-hp air-cooled gasoline engine. For further information write to **Ross & Son**, Dept. C&E, P. O. Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 41.



ITC-12 ...now even further ahead of other crawlers

in maneuverability . . . service accessibility . . .

in functional design . . .

and in work-ability

402 net h.p.
Torqmatic Drives
8 Track Rollers

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Self-retracting reel for welding cable

A new self-retracting reel for welding cable is available from United Specialties, Inc. Designed to hold 50 feet of 2/0 cable, it has a current capacity of 300 amp with a 60 per cent overload factor.

Designated Weldreel Model EA2, the unit is equipped with a heavy-duty retracting spring. To rewind

cable, it is necessary only to release the locking pawls by means of a slight tug on the cable and permit the spring to do the rest. Cable pays out easily to the required length and is held by the locking pawls until released.

The unit is easily mounted on walls, floor, ceiling, or mobile equipment.

The Model EA2 is 23 inches long, 12 inches wide, and 22½ inches high. Without cable it weighs 64 pounds.

For further information write to United Specialties, Inc., Dept. C&E, Box 698, El Dorado, Ark., or use the Request Card at page 18. Circle No. 70.

New portable welder for hardsurfacing

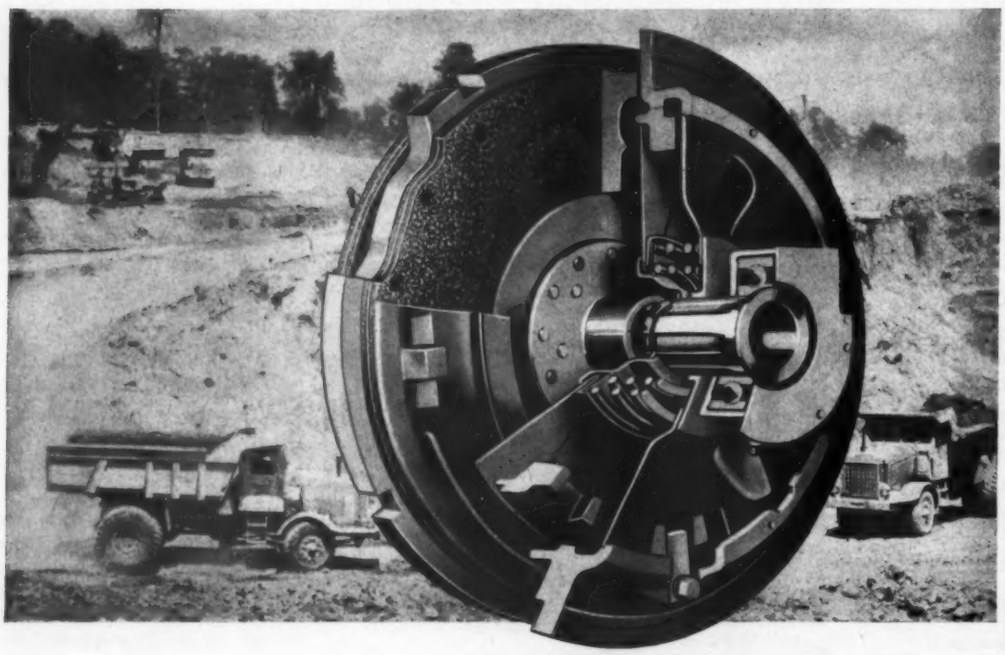
A portable semiautomatic welder designed for hardsurfacing application is announced by the Hensley Equipment Co., Inc.

Known as Porta-Weld, the unit features dual-rod reel and power-drive assemblies mounted on a sturdy 16×18-inch base. The new welder accommodates both standard 12-inch reels and pay-off bulk spooling in 3 and 4-inch widths, 12 inches in diameter. Usable wire sizes include 3/32, 7/64, and ⅛-inch in all semi-automatic hardfacing alloys.

For further information write to the Hensley Equipment Co., Inc., Dept. C&E, 800 Peralta Ave., San Leandro, Calif., or use the Request Card at page 18. Circle No. 13.

←For more facts, circle No. 325

The rear bucket of this gigantic new earthmover loads itself without strain, while the operator fingers push buttons on the panel in front of him. So powerful is the 100-foot-long machine that two buckets instead of one are used to dig and haul its 130-ton load. The buckets can load themselves separately and are unloaded either together or separately as the operation requires. Two 600-hp diesel engines drive ac and dc dynamos under the hood. These dynamos furnish power to drive big dc electric motors, which are geared directly to the rims of all eight wheels. For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 77.



When there's no time for downtime specify Spicer H-D Clutches

Before you start the job, make sure your trucks, your earthmovers, and other equipment, are all equipped with Spicer Heavy-Duty Clutches. That way, you won't have to stop for repairs when time is at a premium.

Play it safe . . . protect your schedule with these extra-durability features that add months more wear to Spicer H-D Clutches:

Anti-friction design . . . Mounting the spring on knife-edge fulcrums reduces friction . . . reduces pedal pressure . . . insures chatter-free operation in both forward and reverse.

Built-in parallelism . . . Contact surfaces are permanently and accurately parallel to insure uniform pressure—regardless of wear—and to eliminate the possibility of cocking.

Easy adjustment . . . Pressure spring tension can be re-adjusted in the field, by almost anyone, without special tools.

Ceramic-type facings . . . For maximum facing life in tough, off-highway service, order your Spicer H-D Clutches with long-wearing, heat-resistant ceramic-type facings.

DANA Spicer

DANA CORPORATION • Toledo 1, Ohio

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Powr-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.

INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.

AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.

RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.

AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.

MARINE: Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.

Many of these products manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario.

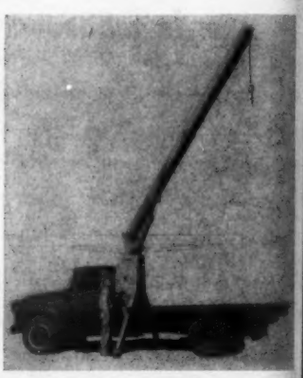
For more facts, use Reader-Reply Card opposite page 18 and circle No. 326

New hydraulic crane for truck mounting

The Model 50 Hydra-Lift, a completely hydraulic unit that lifts up to 5,000 pounds and requires only 21 inches for mounting behind a truck cab, is announced by the Pitman Mfg. Co.

The boom, which rotates a full 360 degrees, can be carried over either the cab or the bed of the truck.

Controls are located on both sides, permitting all boom and load-line actions, or any combination of them, to be accomplished simultaneously.



Power for the Model 50 Hydra-Lift is derived from the truck, through a power takeoff and hydraulic pump. Hydraulic self-locking A-frame outriggers are a feature.

The new crane is available in three models: one has a fixed-length boom, 12 feet long; the second has a boom that telescopes manually from 12 to 16 to 20 feet; the third telescopes hydraulically from 12 to 20 feet.

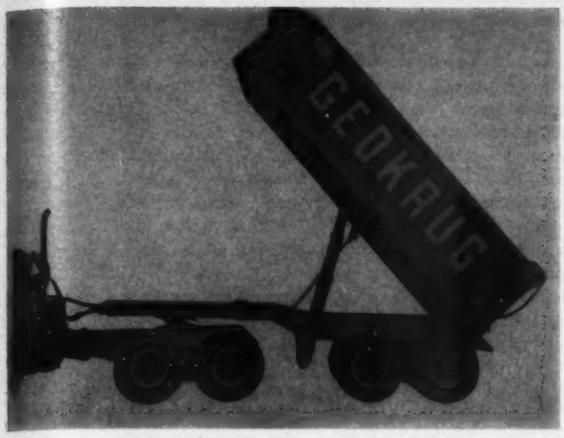
Power for operation of the crane is derived from the truck, through a power takeoff and hydraulic pump.

For further information write to the Pitman Mfg. Co., Dept. C&E, 300 W. 79th Terrace, Kansas City, Mo., or use the Request Card at page 18. Circle No. 49.

Offer dump trailers for 21, 25-yard loads

New ET Series excavator dump trailers offered by Talbert Trailers are said to feature greater capacity and strength for off-highway applications.

The bodies are manufactured from



Talbert Trailers offers this new excavator dump trailer, one of two models in the ET Series.

7-gage steel and have full-length I-beam sills and I-beam cross members. To provide extra resistance to abuse, the bottom dirt-shedder side rails are formed from ¼-inch stock, while the top rail is a box section protected from direct impacts by an inverted angle.

Supported by an H-beam frame of high-strength steel and raised by two Hyco telescopic hoists, the ET Series trailers will handle 35-ton loads, the company reports. A Hendrickson rubber-bushed tandem is said to insure complete reliability and a longer life for the running gear.

Basic models have nominal 20 and 21-foot lengths, with 21 and 25-yard capacities, respectively. Complete chassis are also offered for various purposes.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card at page 18. Circle No. 123.

New portable power saw with reciprocating blade

A reciprocating-blade portable power saw called the Wright Super Rebel is available from Thomas Industries Inc.

The new unit, with a larger bore, greater displacement, and higher

torque at low rpm than the previous model, has only six moving parts.

The Super Rebel is 40 5/16 inches long and weighs approximately 25 pounds. The saw blade is 20 inches long and requires no lubrication; it reportedly can be sharpened in five minutes with a standard file, and takes only 60 seconds to change.

Like its predecessor, the Super Rebel has direct drive.

For further information write to Thomas Industries Inc., Dept. C&E, 410 S. Third St., Louisville 2, Ky., or use the Request Card at page 18. Circle No. 9.

Offer replacement parts for asphalt finishers

The Wohlrab Gear-Machine Co. offers replacement tamper bars and screed plates for bituminous finishers at an investment said to compare favorably with the cost of manufacturers' replacement parts.

Marketed as Viking brand tamper bars and screed plates, these parts reportedly are engineered for longer useful life, thus assuring the user of reduced maintenance costs and greater freedom from downtime.

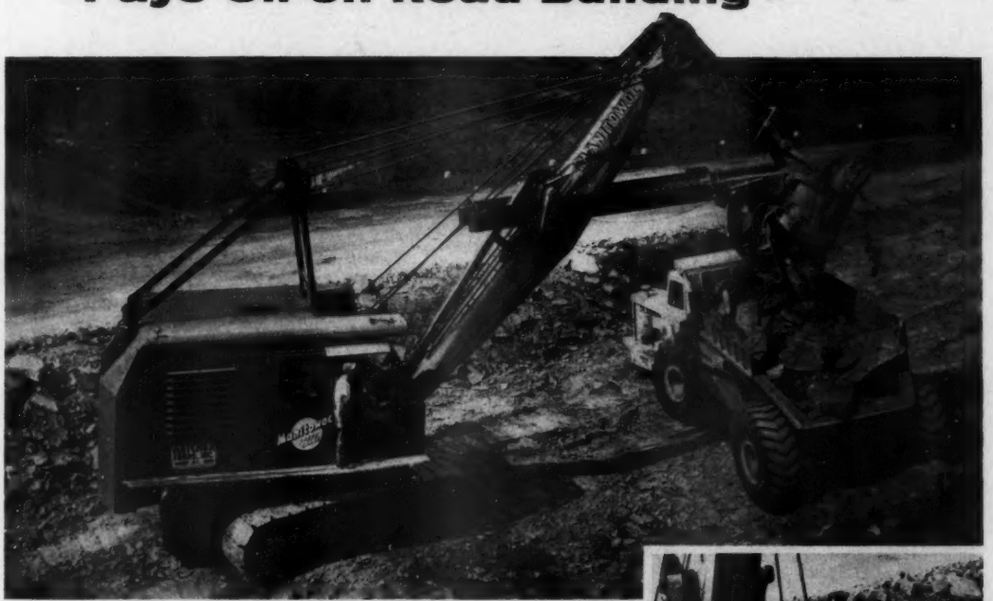
The tamper bars are available in 12, 15, and 30-inch sizes. The long-life quality is provided by the Walco Hard-Cote heat-treating process, which the manufacturer claims puts extra durability into the high-grade steel used.

Viking screed plates, available in four sizes, are fabricated from selected abrasion-resistant steel, and are accurately produced to close tolerances for perfect fit. The plates are furnished ready for installation, complete with locating dowels, studs, bolts, nuts, washers, etc.

For further information write to The Wohlrab Gear-Machine Co., Dept. C&E, 1221 Frederick St., Racine, Wis., or use the Request Card at page 18. Circle No. 112.

How one 2½-yd. shovel moves 2,000 yards of hard sandstone, clay and shale a day on Ohio road job

5th Manitowoc for Hatcher Bros. Pays Off on Road Building



This Manitowoc Model 3000 shovel equipped with a 2½-yd. bucket has been averaging 2,000 yards of sandstone, shale and clay per 10 hour day working on the rebuilding of Route 39 near Salineville, Ohio. Hatcher Bros. Inc. of Mingo Junction, Ohio is handling all the excavating and grading on the $417,000 job which calls for the regrading and removal of 117,000 yards of material, containing approximately 33% rock. In addition to the Model 3000, the company also owns two Manitowoc 1¼-yd. Model 2000 rigs and two 40-ton Model 2800 Mobile Cranes.

300,000 Yards of Rock — Prior to the present operation, the 2½-yd. shovel loaded out 300,000 yards of rock on another Ohio road job. The machine was moved to the present location in only three loads. "On both jobs," says Mr. Jim Smith, Superintendent, "the shovel has given us smooth, uninterrupted performance, with no appreciable downtime. We have never hit a rock formation that the machine could not break up and carry . . . nor have we been halted by a machine failure."

How You Can Benefit — Fleet owners like Hatcher Bros. know they can depend on their Manitowoc rigs for consistent, high output performance on any job. Judge for yourself . . . see your distributor soon for full details on any of the eight bonus-capacity Manitowocs.

Manitowoc shovel cuts a 1' x 1' slope through stratified hard sandstone. Thirty per cent of the excavated rock is used as fill.

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	½-YD. - 3½-YD.	½-YD. - 6-YD.	½-YD. - 2½-YD.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 327

The new stake driver eliminates the need for an air compressor and tractor or truck. One man can handle the entire operation.

Side-form stake driver requires single operator

A mechanical side-form stake driver designed to drive stakes of all lengths up to 50 inches is announced by Concrete Machinery, Ltd.

An automatic steering device guides the machine parallel to the form. The driving head can be regulated by the operator to drive pins whether in line or offset, and the machine can be adjusted to align stakes from any position, vertically or horizontally.

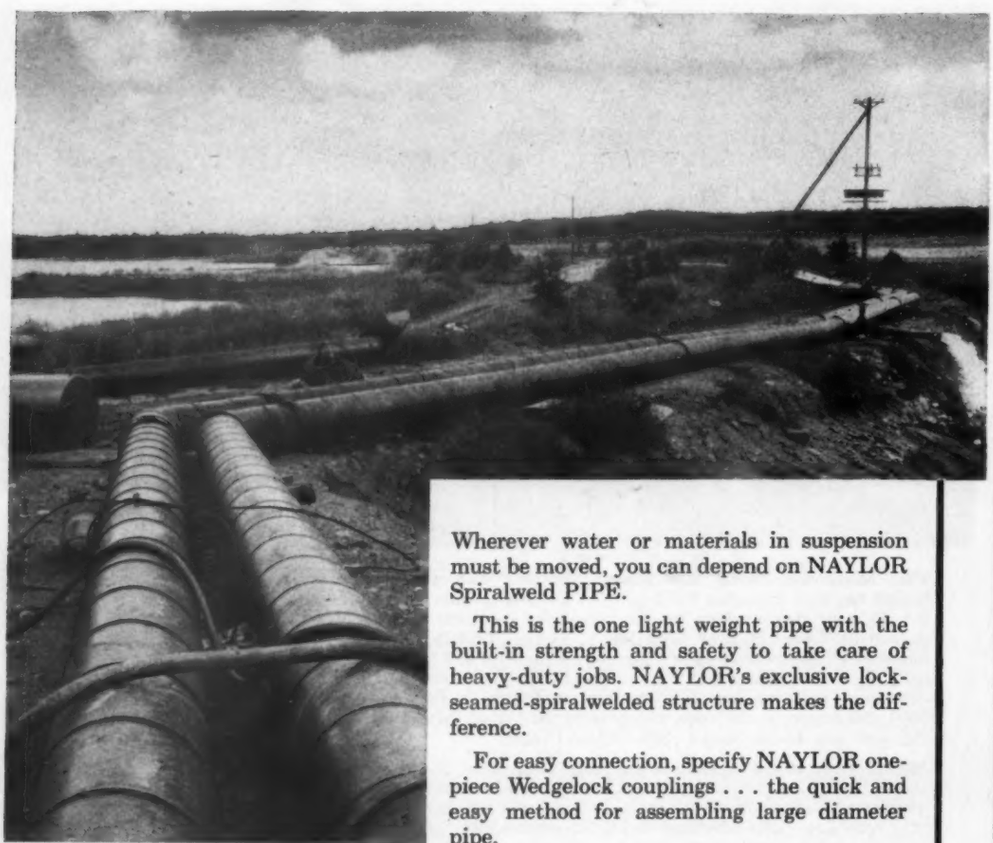
A special feature is electric traction drive incorporating automatic brakes to aid speed of spotting, as well as bringing the machine to a sudden stop when the operator releases the controls.

With this machine, one man can handle the whole operation, the company reports.

For further information write to Concrete Machinery, Ltd., Dept. C&E, 9530 E. Rush St., El Monte, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 115.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Makes LIGHT WORK of **HEAVY** HAULS



Wherever water or materials in suspension must be moved, you can depend on NAYLOR Spiralweld PIPE.

This is the one light weight pipe with the built-in strength and safety to take care of heavy-duty jobs. NAYLOR's exclusive lock-seamed-spiralwelded structure makes the difference.

For easy connection, specify NAYLOR one-piece Wedgelock couplings . . . the quick and easy method for assembling large diameter pipe.

For complete details in capsule form, write for Condensed Catalog No. 59.

NAYLOR PIPE *Company*

1270 East 92nd Street, Chicago 19, Illinois

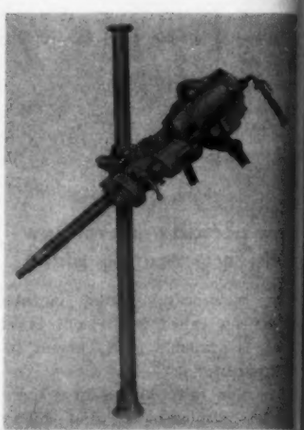
Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 328

Diamond drill features reversible air motor

A new diamond drill for blast-hole coring, or grout-hole work is announced by the Chicago Pneumatic Tool Co.

Designated Model CP-65, the unit features a reversible high-torque rotary motor said to offer 50 per cent more power for drilling to depths of 600 feet.



The new drill is a fully enclosed, dustproof, oiltight unit. Four sets of feed gears, any one of which may be engaged without stopping the drill, give a wide selectivity in the rate of feed and enable the operator to take full advantage of ground and bit conditions. In addition, there are six alternate feed gears that provide further refinement in feed control for unusual formation conditions.

The CP-65 mounts on a standard rock-drill saddle and works in any position from a column, arm, or crossbar. The complete drill with built-in swivel head is only 43½ inches long and weighs 200 pounds.

For further information write to the Chicago Pneumatic Tool Co., Dept. C&E, 6 E. 44th St., New York 17, N. Y., or use the Request Card on page 18. Circle No. 32.

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Scraper offers capacity of 24 cubic yards struck

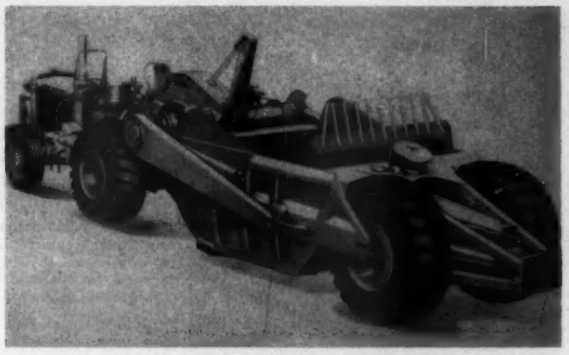
A 24-yard-struck-capacity scraper, designated No. 482 Series B, is announced by the Caterpillar Tractor Co. for use with its DW20 wheel tractor.

According to the manufacturer, the new scraper finds its most economical application in good loading conditions, where haul-road grades are at a minimum and rolling resistance is low.

A special feature on this unit is the location of the bowl lift sheaves in the draft frame spreader tube, with the lift cables attached directly to the bowl sides. This innovation gives maximum protection from dust and fouling of the bowl lift sheaves and cables.

A safety feature is the inclusion of an automatic bowl latch as standard equipment. This is to prevent accidental dropping of the bowl due to cable breakage.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 56.



Designed especially for applications where earthmoving conditions are favorable, the Caterpillar No. 482 Series B scraper, for use with the DW20 wheel tractor, has a struck capacity of 24 cubic yards.

Two parting compounds for concrete forms

Two new all-weather parting compounds for reinforced and prestressed-concrete forms are announced by Swift & Co. They can be applied to forms by spray, brush, or wiping methods.

Parting oil No. 833 is a solvent-type material designed for quick drying; parting oil No. 842 is an oil-type compound. Both products contain antirust additives.

For further information write to Swift & Co., Technical Products Dept., Dept. C&E, 1800 165th St., Hammond, Ind., or use the Request Card that is bound in at page 18. Circle No. 2.

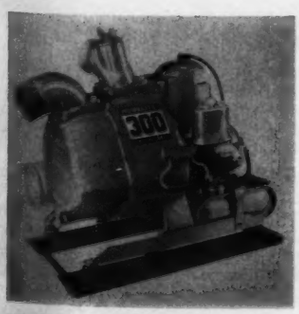
Capacities of 18,000 gph featured in new pumps

Three all-purpose pumps, the 300 Series, are announced by Homelite, a division of Textron Inc. The units are 3-inch self-priming centrifugal pumps, with capacities of 18,000 gph.

All three models will pump and prime at 28 feet above water level, according to the manufacturer, and self-cleaning construction permits handling of muddy and sandy water without clogging.

The quiet, slow-speed Model 8S3-1 has a total head of 65 feet; the Model 8S3-1R, a total head of 125 feet; and the Model 8S3-1P delivers 102 gallons per minute at 60 psi, with a total head of 185 feet. Each pump weighs 103 pounds.

For further information write to Homelite, division of Textron Inc., Dept. C&E, 71 Riverdale Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 24.



One of the new low-cost Barber-Greene Batch Plants in operation. Available in both 1000 and 1500 lb. sizes, these new plants include many years-ahead features.

two new low-cost Barber-Greene Batch Plants

with advanced big-plant features

Write for information on these two new profit-building batch plants.

Many advanced features in new low-cost batch plants

Incorporating job-proved advantages of the famous Barber-Greene Batch-Omatics, these two plants also have many new features, including:

- **New Batchometer Asphalt Metering System** automatically meters preset quantity of asphalt to pugmill for each batch.
- **Dyna-Mix Pugmill** for faster mixing, more uniform coating . . . long life, easy maintenance.
- **Quick, Easy Erection** with three-unit design: screen and bin section; weigh-hopper and pugmill section; base section. Tapered pins guide sections into place . . . automatically align all bolt holes.
- **3½ Deck Vibrating Screen,** with 40 sq. ft. of area, gives top capacity for each plant and for the full range of asphalt mixes . . . integral part of bin section for easier erection. Four bins are standard—not extra.
- **Optional Hydraulic Controls** for easier operation . . . relieve operator of manual exertion; easily converted in the field.
- **Hydraulically Operated Pugmill Discharge Gate** provides instant discharge of mix . . . eliminates segregation. No time wasted between batches.
- **Other Advantages Include:** easier maintenance; complete line of accessories, including fines system; combined overflow chutes; scavenger dust system.

58-44-A

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

The new 2,250-pound air compressor made by the Le Roi Division of the Westinghouse Air Brake Co.

Portable air compressor is slow-speed unit

A 2,250-pound 1,600-rpm rotary portable air compressor is offered by the Le Roi Division of the Westinghouse Air Brake Co.

The Model 125RG2 is a sliding-vane-type 2-stage compressor with an in-line cylinder arrangement. It is rated at 125 cfm of free air compressed to 100 psi.

The compressor is powered by direct drive with a Le Roi wet-sleeve overhead valve engine. According to the company, a 100 per cent capacity modulating control matches air supply to air demand within a pressure range of 10 psi. "One-valve" air-pressure adjustment is provided.

The engine-compressor is supported on a welded steel frame of unit construction, and is enclosed in a lockable steel metal housing. Three-point suspension protects against towing distortion over rough terrain.

The compressor is 10 feet 7 inches long; 5 feet 4 inches wide; and 5 feet ½ inch high.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 1706 S. 68th St., Milwaukee 13, Wis., or use the card at page 18. Circle No. 126.

Heavy-duty cleaner for construction rigs

Aeroil Products Co., Inc., has announced the new CLS-400 heavy-duty steam cleaner, a unit with a capacity of 400 gph at pressures up to 150 psi.

The burner in this cleaner is of the downdraft type and will burn either fuel oil or kerosene. A low water cutoff is furnished to protect the coils in the event of water failure. The heating coils are of the drum type to permit complete drainage, and they feature a built-in de-sooter arrangement, the company reports.

The compound tank has a 3 to 6-hour capacity, depending on the degree of concentration. The compound is heated and agitated automatically, and no premixing is required.

The CLS-400 was primarily designed for heavy-duty cleaning of construction machinery, Aeroil engineers state.

For further information write to Aeroil Products Co., Inc., Dept. C&E, 75 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 127.

Unitized batch plant is portable, accurate

Clark Industries announces the development of a new, completely unitized batching plant, known as the Trans-Plant. The unit reportedly has the advantage of portability without sacrificing accuracy and strength.

The plant can be transported from one job to another with standard highway trailer equipment and assembled with a minimum of time and labor, according to the company.

The Trans-Plant has three unitized sections: the top (bin) section, with capacities of 80, 110, 150, and 180 tons and 3 to 6 compartments to suit job requirements; the batching section (with 2, 3, 4, 5, or 6-cubic-yard Weighbatchers), a completely factory-assembled unit with beam or dial scales, manual or automatic; the supporting section, simplified by the use of hinged columns that swing into place as the batching section is raised. Field bolts hold the columns securely while the top section is placed on the batching section, and the plant is ready for operation.

The Trans-Plant is structurally re-

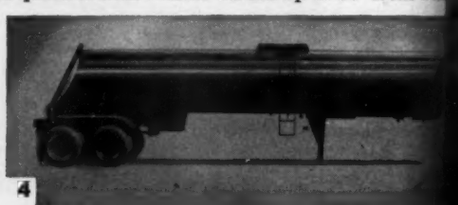
All The Hauling Equipment Yo

1

New cable dumps—Designed to resist shock loads and minimize vibration, the latest Fruehauf Schonrock Cable Dump remains the lowest cost, most economically maintained sand, gravel, and carrier in the business. A semi does the work of a hoist combination, without costly hoist mechanism. It pulls itself or tractor from ruts, operates in tight quarters with tractor turned up to 90° from Tra

3

Aluminum hot commodity tanks—8700 pounds complete is the light, light weight of an all aluminum 6400 gallon Fruehauf asphalt tank insulated and equipped for 400° temperatures. Exclusive Fruehauf automatic welding processes are typical of the advanced, unmatched quality of Fruehauf tanks.

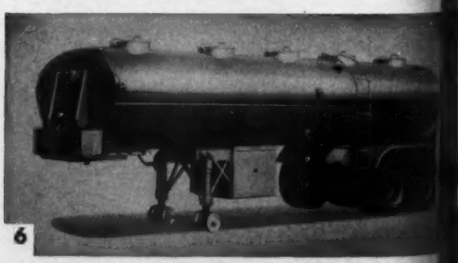


4

Steel hot commodity tanks—Fully insulated asphalt tanks with steel frames and steel or alu num jackets can be equipped for even temperatu up to 400° and with a wide range of optional f tures. Units in a wide range of capacities are kep stock for immediate delivery.

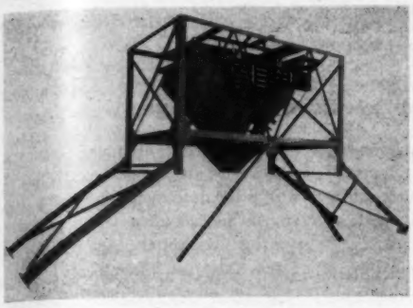
5

Airslide* bulk cement tanks—Fruehauf Airslide units are adaptable to both semi and train operation. Initial cost and maintenance are low because of the mechanical simplicity. Gravity does most of the discharge work with the aid of air blown through angled fabric panels. *(*Airslide—Trademark, Fuller Co.)*



6

Screw type bulk cement tanks—Up to 10% c bulk cement can be hauled in Fruehauf's new "T and a half" screw-type Bulk Cement Trailer bec of its drop-frame construction. Discharge is r cost and upkeep economical, because materi moved by twin front screws and a single rear sc



The batching section of the new Clark Trans-Plant is a factory-assembled unit ready for field erection.

inforced and of all-welded construction. Bracing on the support columns can be designed so that drive-through can be in either direction.

For further information write to Clark Industries, Construction Equipment Division, Dept. C&E, 375 E. Fifth Ave., Columbus, Ohio, or use the Request Card at page 18. Circle No. 107.

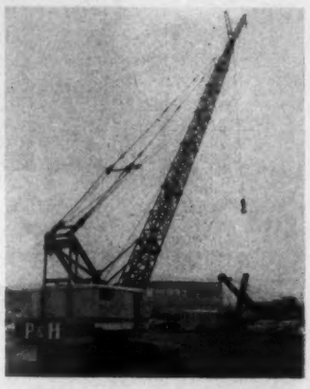
Crawler erecting crane has 100-ton capacity

A crawler erecting crane in the 2½-yard excavator class, said to have a lifting capacity of 100 tons with a 60-foot boom at 15-foot radius, is announced by the Harnischfeger Corp.

Designated P&H Model 1010, the machine has a 16-foot 10-inch-wide crawler assembly designed to provide the required stability to handle 200 feet of heavy-duty boom or 300 feet of lightweight boom for concrete work.

Power for the unit is supplied by a Caterpillar 210-hp turbocharged diesel engine. A separate gear-driven travel mechanism actuated through an air-controlled coupling provides the crane with independent propel.

Power for swing is transmitted electromagnetically through P&H magnetorque. This swing assembly reportedly does away with the need for friction swing clutches, and eliminates lining replacements, adjustments, and maintenance required with conventional assemblies. It is said to produce faster work cycles, increased production, and to reduce operator fatigue.



The crawler assembly on this 100-ton-capacity unit is 16 feet 10 inches wide, permitting the machine to handle 200 feet of heavy-duty boom or 300 feet of lightweight boom for concrete work.

The crane also features an independent planetary boom hoist with single-direction cam clutches, designed to provide positive control of the boom.

The machine measures less than 13 feet with gantry in the folded position, and less than 12 feet with the gantry removed, to simplify transporting and operation in restricted areas.

For further information write to the Harnischfeger Corp., Dept. C&E, 4400 W. National Blvd., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 62.

Offer new slurry pump in sizes to 12 inches

Morris Machine Works offers its new type CK heavy-duty slurry pump.

This low-speed centrifugal pump is designed especially to handle fluids containing random-size solids and highly abrasive materials.

The pump is available in sizes of 4, 6, 8, 10, and 12 inches.

For further information write to Morris Machine Works, Dept. C&E, 20 E. Genesee St., Baldwinsville, N. Y., or use the Request Card at page 18. Circle No. 48.

eed For Any Construction Job!

he Trailers designed
r the biggest payloads
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7

New lightweight platforms—Lighter by up to 1200 pounds than previous steel platforms, the new heavy duty Fruehauf Workhorse utilizes 19½" deep steel I beams as direct supporting members for lift trucks and loads, has full width I beam cross-members for added structural strength.

o hoist dumps—Front-mounted hydraulic tele-ic hoist dumps are designed by Fruehauf in acities up to 13 cubic yards of sand or gravel, 25 ock. Tandem units feature the "no-hop" P2 erconstruction, deep I beam frame members, 22', 24', and 26' bodies, several chassis lengths, ICC lights.

8

Low cost multi-purpose platforms—Quality features at low, low prices distinguish this husky, all purpose flat bed, which is ideal for hauling heavy builders' materials, light machinery, and bulky installations. Single and tandem axle units are available, from 27' to 42' long.

chless removable gooseneck carryalls—No aulic assists or winches are required on these hauf carryalls in capacities up to 50 tons! Front oading and unloading of huge shovels is reduced inutes, and coupling or uncoupling is easily led by a driver, without shock to loads.

10

Single and double drop carryalls—Fruehauf builds the world's huskiest line of carryalls of all types in a full range of capacities. Single and double drop units for loads of 25 to 75 tons are always ready for quick delivery and specials for larger tonnages are designed to your specifications.

A Full Line Of Moneymaking Fruehauf Construction Trailers—
One For Every Kind Of Job—Ready For Immediate Delivery When Needed!

FRUEHAUF TRAILERS

World's Largest Builder of Truck-Trailers
FRUEHAUF TRAILER COMPANY
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PLEASE SEND FURTHER DETAILS ON FRUEHAUF CONSTRUCTION UNITS CIRCLED:
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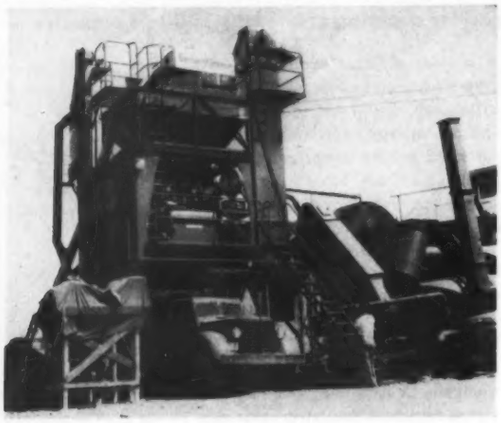
NAME_____
COMPANY_____
ADDRESS_____
CITY_____ STATE_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 331



Designed to produce all types of bituminous mixes, the new Barber-Greene plants are basic 4-bin units, incorporating many features of the larger BatchOmatic plants.

Two new asphalt plants feature 4-bin design

The Barber-Greene Co. announces two new asphalt batch plants: the Model 890, with 1,000-pound rated capacity, and the Model 891, with a rated capacity of 1,500 pounds.

Both plants are basic 4-bin units, designed for the production of all types of bituminous mixes, and both incorporate many features of the company's larger BatchOmatic plants.

A feature of these units is the Batchometer asphalt-measuring system, designed to combine accuracy with push-button operation. Equipped with a separate meter and pump, the system may be preset to deliver any amount of asphalt required for a batch. Once set, there is no need to reset for succeeding batches of the same specification.

Both plants feature 3-unit design: screen and bin section, weigh hopper and pugmill section, and base section. To serve the 4-bin design, both models are equipped with a 3½-deck vibrating screen.

Extensive use of hydraulics is made in the plant controls.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 128.

British-made theodolite offers several features

A British-made optical micrometer theodolite is offered by Precision Instruments, Inc.

Known as Model V308, the unit reads directly to 20 seconds of arc and by estimation to 5 seconds. Its major features are said to include brilliance of field of the circle-reading microscope, high degree of magnification which can be applied to the graduation system, and a convenient reading position.

The telescope is of the internal-focusing type with spiral focusing eyepiece. The instrument weighs pounds.

The theodolite, complete with sight levels, optical plummet, centering device, and either telescopic or non-telescopic tripod, is packed in a special case of lightweight construction.

For further information write to Precision Instruments, Inc., Dept. C&E, 1900 Fifth Ave., Troy, N. Y., or use the Request Card at page 1 Circle No. 53.

For further information on a product described in this section circle the indicated number on the Request Card at page 18.

NEW! Presstite #55-MIL joint sealer resists jet blast, heat, fuel and oil... cures quickly...will not track

Here is the strongest, toughest, most economical sealant of its kind on the market today . . . *laboratory tested and field-service proved!* Presstite No. 55-MIL Sealer is a Polysulfide Polymer, two-component, cold-applied sealing compound, specifically designed for sealing joints in Portland Cement Concrete, military and commercial airfield paving, exposed to the action and operational requirements of jet aircraft.

1. **Resists repeated blast** from high jet turbine thrust.
2. **Resists super-elevated temperatures** of after-burner "cut-in".
3. **Resists impregnation** by foreign materials.
4. **Resists action of jet fuels:** JP-3, JP-4, JP-5; "SKYDROL" (fire-resistant hydraulic fluid); also detergents and oils.
5. **Resists action of repeated freeze-thaw cycles,** will not crystallize at sub-zero temperatures.
6. **Maximum adhesion** to clean concrete surfaces.
7. **High cohesive strength.**
8. **High ductility,** remains ductile at *minus* 20°F.
9. **Fast curing,** sets up tack and is track-free within 60 minutes after application.

For a joint sealant that will *last*—specify Presstite No. 55-MIL Sealer *first*—get tomorrow's sealer today!

Note: A modification of No. 55-MIL is available for sealing joints in PCC highways, bridge decks, parking lots and industrial floors. Known as Presstite No. 55-HWY (Highway Type). Your inquiry is invited. Write Dept. C-2.

PRESSTITE-KEYSTONE ENGINEERING PRODUCTS COMPANY

A DIVISION OF AMERICAN-MARIETTA COMPANY — 3744 CHOUTEAU AVE. • ST. LOUIS 10, MO.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 332

New transit-mixer line offers many improvements

The Construction Machinery Co.'s Transcretes for 1959 are said to offer reduced mixer weight and greatly increased payload. In addition, a new drum blading design provides faster no-flash-back charging and faster controlled discharge.

Other improvements include new simplified 2-lever controls that give the operator control of throttle, drum rotation direction, clutch, and automatic drum brake at either end of the mixer; new 16-inch-wide chutes that are stronger, yet weigh 20 per cent less; a permanent-type fold-over chute section that may be quickly detached without removing any pins or bolts; and a new water pump with a built-in circulating system to eliminate overheating of pump components. The water pump has been relocated to provide greater accessibility.

CMC Transcretes are available in 4 to 7-yard capacities with separate engine drive, and in 5 to 7-yard capacities with truck engine drive.

For further information write to the Construction Machinery Co., Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 29.

A special feature on the new CMC Transcretes is an improved drum blading design said to provide faster no-flash-back charging and faster controlled discharge. Units are available in capacities from 4 to 7 yards.

One-stop plant batches cement and aggregates

Designed to incorporate cement and aggregate batching into a one-package automatic unit, the Johnson Automaster-CA offers high-capacity paver batching. Easy transportation of this new plant is possible because no shipping piece is wider than 8 feet.

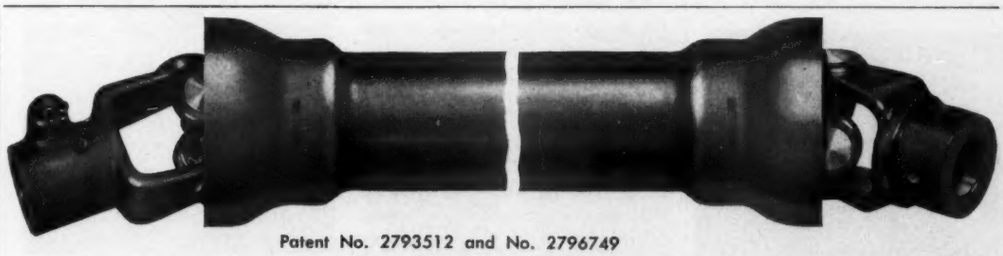
The unit's bin for the Automaster-CA is divided into three equal aggregate compartments and one cement compartment. Aggregate capacity is 100 cubic yards.

Three 38-cubic-foot batchers for aggregates and one 14-cubic-foot batcher for cement have a capacity adequate for a 1½-cubic-yard paver batch. The batchers discharge through a separate collecting hopper with a built-in cement chute arranged for release of cement within the aggregates or into a separate cement can, whichever is specified. Batch cycle is only 15 seconds, according to the manufacturer.

Each aggregate scale is equipped with a moisture-compensating beam and a dial adjustment for moisture in material. The operator can use mechanical mix selection for convenient field setting.

Electric controls, mounted in the scale cabinet, actuate air rams which operate the batcher gates.

For further information write to the C. S. Johnson Co., subsidiary of Koehring Co., Dept. C&E, Box 71, Champaign, Ill., or use the Request Card at page 18. Circle No. 91.

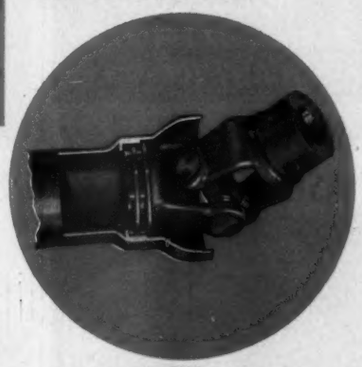


Patent No. 2793512 and No. 2796749

UNIVERSAL SAFETY

ROLLER BEARINGS are so tightly sealed-in that dirt and moisture cannot enter.

This NEW type MECHANICS SAFETY SHIELD solves many operating problems. True ROLLER BEARINGS provide larger contact area, distribute the load, and avoid trouble caused by ball bearings bursting through the shield. No welds in the shield—leaving longer overlap of shield tubes (with same length shaft) for greater strength. Has fewer parts. Thousands of hours of numerous field operations prove that this NEW design has far longer life than other safety shields. Road equipment manufacturers everywhere are switching to MECHANICS shields for greater safety. Write for information about sizes, joint types, etc.



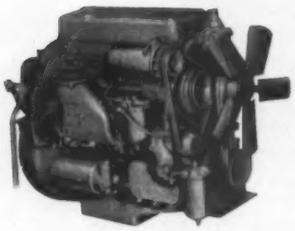
MECHANICS UNIVERSAL JOINT DIVISION
Borg-Warner • 2030 Harrison Ave., Rockford, Ill.
Export Sales: Borg-Warner International
36 So. Wabash, Chicago 3, Illinois

MECHANICS Roller Bearing UNIVERSAL JOINTS
For Tractors • Trucks and Farm Machines

Shield can be removed and serviced by the operator—using only a screwdriver.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 333

GM expands diesel line; units range to 1,650 hp



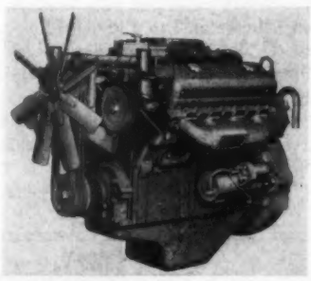
General Motors' new 130-maximum-horsepower diesel. ►

The Detroit Diesel Engine Division of General Motors has announced the addition of eight new basic units to its line of 2-cycle diesel engines. Formerly covering the 30 to 893-hp range, the firm's line has now been expanded to include single, multiple, and turbo-powered engines ranging from 20 to 1,650 horsepower.

Four single V-type engines in the 71 Series range from 252 to 675 horsepower, and a new group of smaller engines known as the 53 Series ranges from 20 to a maximum of 195 horsepower.

The new V additions to the 71 Series include a 6-cylinder unit offering 252 maximum horsepower (the 6V-71); the 8V-71, with 334 maximum horsepower; the 12V-71, with 504 maximum horsepower; and the 675-hp 16V-71. In addition to 6-71 and 110 multiple units, 12V-71 and 16V-71 twins are now available delivering up to 1,008 and 1,350 maximum horsepower, respectively. When turbopowered, the 16V-71 twin will deliver up to 1,650 maximum horsepower.

The 53 Series includes in-line 2, 3, and 4-cylinder units ranging from 20 to a maximum of 130 horsepower. Also in this new line is a 6-cylinder V-type engine of 195 maximum horsepower.



Larger engines range from 195 to 675 maximum horsepower.

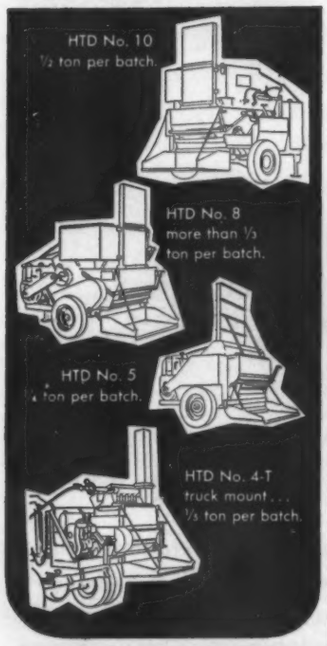
According to the company, the V configuration of these units, along with their 2-cycle design, permits them to be installed in space ordinarily occupied by engines of considerably less horsepower. Pistons, rings, valves, valve operating mechanisms, injectors, and many other parts are interchangeable, engine for engine, within each series.

The 12V-71 and 16V-71 were designed with special attention to the needs of earthmoving and other contractors who use large scrapers and off-highway haulers. The 2, 3, 4, and 6-cylinder 53 Series engines are recommended for such applications as small wheel and track-type tractors, loaders, hoists, auxiliary engines on truck mixers, cement and asphalt paving equipment, ½ and ¾-yard shovels, core drills, air compressors, and generator sets.

For further information write to the General Motors Corp., Detroit Diesel Engine Division, Dept. C&E, 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 125.

FOR LOW-COST HOT OR COLD PAVING OR PATCHING IN ANY SEASON

McConnaughay
ASPHALT MIXERS



For details and specifications write...

McCONNAUGHAY MIXERS, INC.
LAFAYETTE, INDIANA
National distributors: Asphalt Equipment Co.
3314 Cherry Lane, Fort Wayne, Indiana

For more facts, circle No. 334

HOW TO "BELT" TIE-WIRE PROBLEMS

When workers use CF&I Annealed Cal-Tie Wire in the handy, belt-borne dispenser, the weight and worry of clumsy shoulder coils is eliminated. There are no loose wire ends—hence no danger of facial scratches or costly eye injuries.

With this modern method of carrying re-bar tie wire, both hands are free—wire can't kink, tangle or catch on protruding objects, thus work in close quarters is easy and safe.

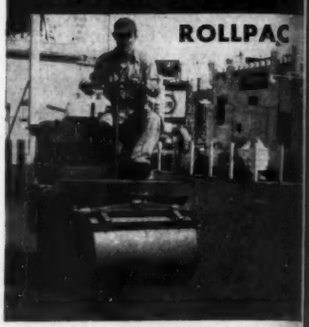
Your workers will like the convenience and safety of Cal-Tie Wire and you will appreciate its efficiency and economy. Cal-Tie Wire Coils weigh approximately four pounds and the wire is available in 14 through 20 gage. Why not get full details now from the nearest sales office listed below.

CF&I CAL-TIE® WIRE
THE COLORADO FUEL AND IRON CORPORATION 5290

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver
El Paso • Ft. Worth • Houston • Kansas City • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City • Phoenix
Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York
Philadelphia • CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

For more facts, use Reader-Reply Card opposite page 18 and circle No. 335

YOU CAN'T OUTGROW A ROLCOR ROLLER
STATIC OR VIBRATORY



Whether your job is . . .
Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.
That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 336

Curtiss-Wright shows new line of scrapers

A new line of self-propelled and tractor-drawn scrapers has been introduced by the South Bend Division of the Curtiss-Wright Corp. The scrapers were demonstrated for the trade press at a recent preview at the company's plant in South Bend.

The new scrapers range in size from 7 to 30 cubic yards struck capacity; rear-dump models in sizes to 35 tons capacity. Featured at the demonstration were the Model CW-226, a 2-axle unit with a capacity of 26 yards struck and 36 yards heaped, and the CW-220 with a 20-yard-struck, 27-yard-heaped capacity.

Both scrapers are powered by a GM Model 6-110T 375-hp diesel through an Allison automatic transmission and torque converter said to permit road speeds up to 35 mph with full load. The company's Roto-Gear hydraulic steering system provides instant response and fingertip control throughout the entire 180-degree steering arc.

To increase equipment utility, both scrapers are interchangeable with a 35-ton rear-dump unit.

For further information write to the South Bend Division, Curtiss-Wright Corp., Dept. C&E, South Bend, Ind., or use the Request Card at page 18. Circle No. 100.

The self-propelled Model CW-226 has a capacity of 26 cubic yards struck and 36 cubic yards heaped. Interchangeable with a 35-ton rear-dump unit, the machine incorporates all of the newest Curtiss-Wright design features, including the Roto-Gear hydraulic steering system.

New automatic photocopier is compact, lightweight

A portable, electrically operated photocopying machine called Porta-Fax is offered by the General Photo Products Co., Inc.

The new unit weighs 18 pounds and measures 18 inches long, 6 inches

deep, and 10 inches high. It handles sheets up to 9½ inches wide of any length, and it reproduces from all colors and ball-point pen.

According to the manufacturer, Porta-Fax is a self-contained unit that automatically exposes, processes, and prints sharp, error-free copies at the rate of 60 to 90 copies per hour.

For further information write to the General Photo Products Co., Inc., Dept. C&E, General Photo Bldg., Chatham, N. J., or use the Request Card at page 18. Circle No. 7.

Rapid starts at 65 below with new starting fluid

The Sinclair Refining Co. announces a new Aerosol-type container for Sinclair starting fluid.

The container is designed to allow servicing of all types of gasoline and diesel engines in year-round service. A special gas propellant is used to assure maximum positive discharge pressure at below-freezing temperatures.

The starting fluid is sprayed into the air filters or intake manifolds, and rapid starts are assured at temperatures as low as minus 65 degrees F. According to the manufacturer, this fluid allows trigger-fast ignition, and at the same time smoother sustained burning that eliminates the possibility of destructive detonation.

For further information write to the Technical Service Division, Sinclair Refining Co., Dept. C&E, 600 Fifth Ave., New York 20, N. Y., or use the card at page 18. Circle No. 93.

Vallejo, Calif. Interchange

Chicago-Calumet Skyway

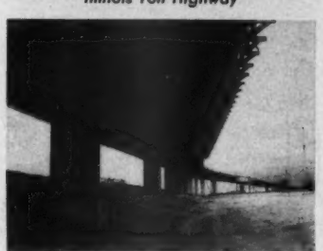
Chicago-Calumet Skyway

Illinois Toll Highway

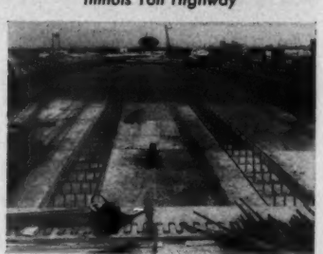
Illinois Toll Highway

Illinois Toll Highway

Chicago-Calumet Skyway



Chicago-Calumet Skyway



Chicago-Calumet Skyway

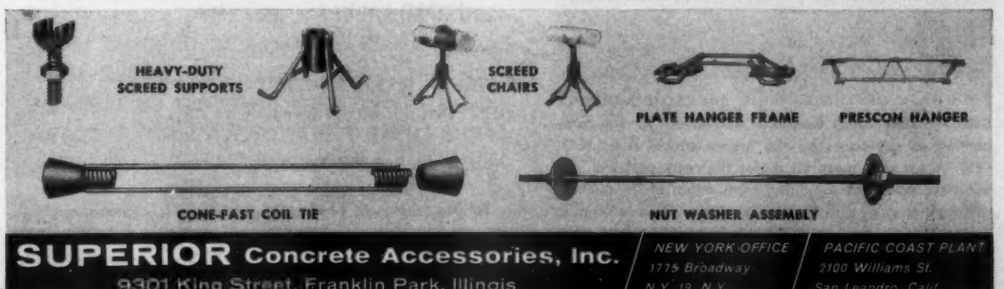
SUPERIOR ACCESSORIES For Bridge Abutments, Approaches, Grade Separations, Interchanges, and Decks

Various types of Superior Accessories provided money-saving forming in the bridges and related jobs pictured above. With the increasingly keen competition for this type of work, contractors have discovered that the efficient forming methods of SUPERIOR Accessories offer all-important bidding advantages. Some of these accessories are shown below.

Whenever you are planning form work . . . Superior's experienced engineering service is available to prepare form layouts, estimates and quotations. This comprehensive service is offered without charge.

Write for NEW 6-PAGE BULLETIN describing the Superior items for use in form work in the general field of bridges, both structural steel and prestressed concrete.

Photo Credits—Calif. Div. of Highways, Peter Kiewit Sons, McCammon-Wunderlich; Illinois Toll Highway Comm.; Kenny Const. Co., J. M. Corbett Co.



SUPERIOR Concrete Accessories, Inc.
9301 King Street, Franklin Park, Illinois

NEW YORK OFFICE
1775 Broadway
N.Y. 19, N.Y.

PACIFIC COAST PLANT
2100 Williams St.
San Leandro, Calif.

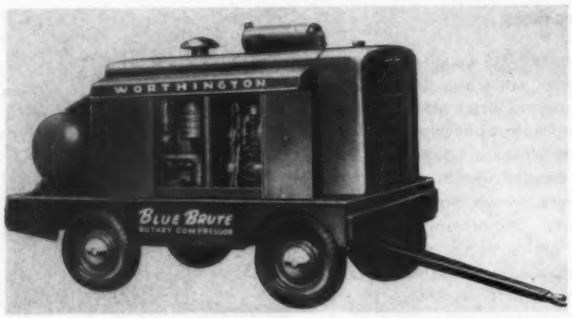
For more facts, use Reader-Reply Card opposite page 18 and circle No. 337

New rotary compressor offers several features

The Worthington Corp. announces its Model 365 Blue Brute rotary compressor.

Featuring the company's over-under design, the new unit represents a method of construction that puts the second-stage compressor cylinder directly over the first stage. The 365-cfm machine is equipped with self-draining cylinders and a silent chain drive that is rated for 20,000 hours of life.

Every moving part of the compressor is easily accessible. There are five automatic controls that eliminate high-discharge air temperature,



engaging the clutch while the engine is running, and overheating of cooling water.

The unit is powered by a Cummins Model NCH-400 engine.

For further information write to the Worthington Corp., Dept. C&E, Worthington and Harrison Aves., Harrison, N. J., or use the Request Card at page 18. Circle No. 102.

Arc welder has range of 100 to 625 amp

Budget 500, a new ac transformer-type arc welder rated 500 amp, at 40 volts, on 60 per cent duty cycle, is available from Hobart Bros. Co.

It has a welding range of 100 to 625 amp in three overlapping main step settings of 100 to 300 amp, 195 to 475 amp, and 375 to 625 amp. These three coarse adjustment steps, with rheostat for fine adjustment,

provide dual control to permit choice of open-circuit voltage to suit the job.

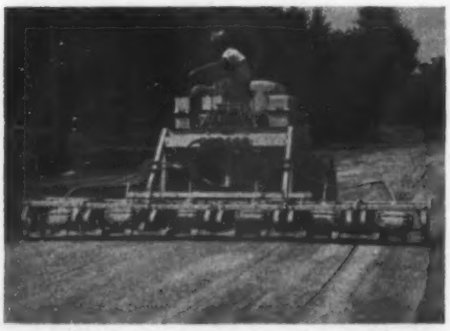
The transformer is of shell-type design, using the "diverter path" principle. Double primary provides for operation on either 230 or 460 volts. No high voltage appears across any control coils, and this eliminates the possibility of insulation breakdown or high voltage appearing under the rheostat handle.

For further information write to Hobart Bros. Co., Dept. C&E, Hobart Square, Troy, Ohio, or use the Request Card at page 18. Circle No. 00.

THE NEW JACKSON TRAILER COMPACTOR

Push or Pull it...

WITH *ANY PRIME MOVER



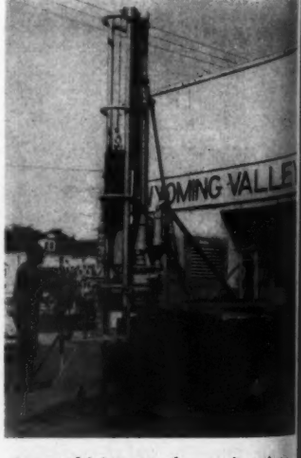
TEAMMATE OF THE FAMOUS **JACKSON MULTIPLE COMPACTOR** which was used exclusively for the compacting of sub-bases on the highly critical A.A.S.H.O. TEST ROAD and most all major highway projects. An excellent means of providing compaction at its quickest and best is offered in the choice of these two machines.

For the host of contractors acquainted with the outstanding performance of the Jackson Multiple Vibratory Compactor, the advent of the new TRAILER COMPACTOR **will be great news. For here is a machine basically similar, costing considerably less, that can be** PUSHED or PULLED BY *ANY PRIME MOVER CAPABLE OF SLOW (50 f.p.m.) WORKING SPEEDS . . . TOWED TO LOCATION AT ANY ROAD SPEED . . . OPERATED IN EITHER DIRECTION, NO TURNING OR BACKING NECESSARY . . . REMOTELY CONTROLLED BY OPERATOR OF PRIME MOVER. WORKHEAD MAY CONSIST OF 3, 4, 5, or 6 VIBRATORY UNITS, **(each developing 6,000 lbs. of force at 4200 RPM)** OR TWO WORKHEADS OF 4 UNITS EACH MAY BE EMPLOYED. INDIVIDUAL UNITS MAY BE DETACHED AND OPERATED SEPARATELY. POWER PLANT SUPPLIES BOTH SINGLE AND 3-PHASE 110-150 VOLT, 60-80 CYCLE AC AND HAS MANY USES.

Write, wire or phone for additional information.

JACKSON VIBRATORS, INC. LUDINGTON, MICH., U.S.A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 338



A post-driving attachment has been added to the Sterling earth borer. The hole may be dug or the post driven from either side, or within a radius of 180 degrees, by virtue of the machine's turntable and fore and aft mounting. According to the manufacturer, the driving plate can be removed and auger installed on the digging bar in approximately five minutes. For further information write to the Wyoming Valley Equipment Division, Valley White Truck Co., Dept. C&E, 714 Wyoming Ave., Kingston, Pa., or use the card at page 18. Circle No. 158.

Asphalt tanks located above ground are the unusual feature of this batch plant, owned and operated by A. Teichert & Son, Inc., of Sacramento, Calif. The plant is completely mobile. It is operated by five men and can be broken down and moved to another location within 24 hours. Three Fruehauf 12,000-gallon-capacity tank trailers which are insulated with 4 inches of Ultralite Fiberglas, serve to store the asphalt. They are heated by electrodes that run the full length of the tank. A Fruehauf stainless steel van is used as a control office for the entire operation. For further information about these trailers write to the **Fruehauf Trailer Co.**, Dept. C&E, 10928 Harper Ave., Detroit 32, Mich., or use the Request Card at page 18. Circle No. 31.

Portable space heaters offered in three models

The Muller Machinery Co., Inc., announces a new line of portable oil-fired space heaters.

The heaters are available in 125,000; 250,000; or 500,000-Btu models.

New design features include a burner nozzle said to eliminate fumes; a preset burner head that requires no further adjustments; burner electrodes and nozzle that are easily removed for cleaning; and a fuel tank that insures a continuous flow of heat for a full 16 hours.

For further information write to the Muller Machinery Co., Inc., Dept. C&E, P. O. Box 248, Metuchen, N. J., or use the Request Card at page 18. Circle No. 129.

Extend electric hoist capacity range to 2 tons

Three new models of the CM Lodestar electric hoist extend the capacity range to 2 tons and double the lifting speeds available in the ½ and 1-ton sizes.

The Model R, a 2-ton-capacity unit, features a lifting speed of 8 fpm; the Model L, of 1-ton capacity, is rated at 16 fpm; and the ½-ton-capacity Model J lifts at 32 fpm.

For further information write to the Chisholm-Moore Hoist Division, Columbus McKinnon Chain Corp., Dept. C&E, 6067 Fremont Ave., Tonawanda, N. Y., or use the Request Card at page 18. Circle No. 8.

With GALION Graders, contractors find their important jobs are seldom delayed because of grading operations. Clay, shale, sand, rock, or weather make little difference — GALIONS push thru *on schedule*.

From gigantic rough cuts and bank sloping to the most accurate fine grading in finish operations and fast surface mixing — you're safe and sure with a GALION.

Write for literature.

THE GALION IRON WORKS & MFG. CO.

General and Export Offices — Galion, Ohio, U.S.A.

MOTOR GRADERS & ROLLERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 339

Designed primarily as a rehandling machine and for drop-ball application, the Type 362 wagon crane can carry up to 120 feet of boom, and 15 or 20-foot jibs for added versatility in crane work. Its capacity is rated at 45 tons.

New wagon crane carries up to 120 feet of boom

The Marion Power Shovel Co. announces a new 45-ton-capacity wagon crane.

Designated Type 362, this off-highway unit is designed primarily as a rehandling machine and for drop-ball application in quarries. It can carry up to 120 feet of boom, and 15 or 20-foot jibs for added versatility in crane work. The machine features Marionair controls for ease of operation.

Mounted on a 20-foot 1-inch Maxi carrier, the machine has a working weight of 111,700 pounds. Carrier width is 12 feet 2 inches, and the over-all height is 18 feet 9 inches.

Power is furnished by either a GM 6-71 diesel with electric starter and straight drive standard, or a Cat D326F with gasoline-engine starter with speed-reducer drive standard. Torque converters are optional for either engine.

Other major optional features available are independent propel and independent boom hoist.

For further information write to the Marion Power Shovel Co., Division of Universal Marion Corp., Dept. C&E, Marion, Ohio, or use the Request Card at page 18. Circle No. 90.

Add 6½-yard model to transit-mixer line

This 6½-cubic-yard-capacity Agitor is mounted on a tandem International Model R-190 truck. In the transit position the chutes are folded. The first chute extension can be carried on the fender.

The S & M Mfg. Co. announces its 6½-cubic-yard Agitor transit mixer.

The agitator rotates inside the mixer body, and the open top permits fast charging and visual inspection of each load.

According to the company, this Agitor is completely hydraulic-powered, with the power-pump driven by a standard truck transmission power takeoff or new S & M front power takeoff.

The unit reportedly will handle high or low-slump concrete, with discharge up to a yard in ten seconds.

For further information write to the S & M Mfg. Co., Inc., Dept. C&E, 2901 W. Mill Road, Milwaukee 9, Wis., or use the Request Card at page 18. Circle No. 69.

Fast-working Austin-Western Super 99 6-wheel Tandem grader using off-set position to move ditch material up on the shoulder in a single pass along newly blacktopped U.S. 30 in New York State.

Austin-Western 6-wheel tandem delivers brute force when and where you need it

—says Project Manager Irving Haven, Potter-DeWitt Construction Co., Pavilion, N. Y.

"All-wheel steering on the Austin-Western 6-wheel tandem grader is a real advantage on construction jobs, because it's so easy to steer. Most 6-wheelers are hard to turn, but not the A-W." That's what Project Manager Irving Haven, of the Potter-DeWitt Construction Co., says about the A-W tandem 6-wheel grader.

Quite a machine

"The A-W tandem runs fast and has a lot of traction," Mr. Haven remarks. "You can dog-track with ease. You can grade a shoulder and yet never take your wheels off paving.

"There's more power on the blade, so you can do more work on a wider variety of jobs than with other make graders. The A-W makes ditching and radius work like driveways extra fast and easy. My operators like the tandem A-W because it's so easy to operate. They are a lot less tired after a shift on the A-W than other graders.

No major repairs

"It has real brute force that can be delivered when and where you need it with ease and precision. We have two tandem 6-wheelers. A Super 88, new in June 1954, has been on the job steady for 4 years without a single major repair. Our Super 99 is just a year old, and no problems with it either.

"We are using two tandems and four 4-wheelers on the job. Altogether the company has a total of 12 A-W graders and 3 A-W rollers. I can tell you we get excellent service from our distributor. We're really sold on Austin-Western graders!"

Dependability. Low maintenance. More power. Easy operation. These are a few of the reasons why contractors everywhere are turning to Austin-Western for big jobs where speed and performance pay off in dollar savings!

See your nearby A-W distributor—or write us for complete information about the hydraulically controlled A-W tandem with all-wheel drive and all-wheel steering.

Austin Western 100th YEAR
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Reader-Reply Card opposite page 18 and circle No. 340

If you sell dirt, peat or clay—improve its value—raise your income

● Shredded, pulverized or processed soil materials are much more valuable because they're easier to put in place and are more productive in use.

And the Lindig Shredder above is the one for you. It feeds, shreds and loads up to 100 yds. per hr. Fed by bucket loader, power shovel or dragline, materials are conveyed to the patented dual shredding assembly; here 48 special alloy hammers rotating at 1200 RPM produce perfectly conditioned materials.

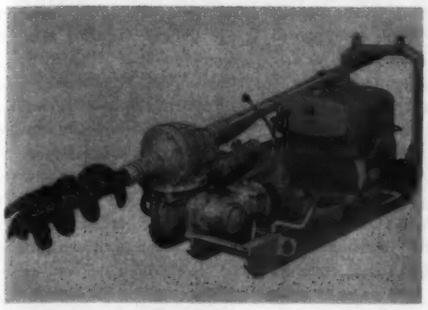
This Lindig Model CL-100 design protects rotor assemblies and hammers from damage by large, foreign objects. Sound, rugged construction; pneumatic tires for easy movement and optional gas, diesel or electric power units.

Smaller capacity models also available. Write for name of your nearest Lindig Dealer. National sales and service since 1940.

EARTH SHREDDING EQUIPMENT
Lindig Manufacturing Co. Inc.
1875 West County Road C, Saint Paul 13, Minnesota

For more facts, use Reader-Reply Card opposite page 18 and circle No. 341

New utility drill is portable unit



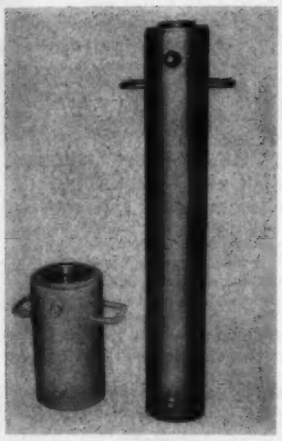
A lightweight utility drill for the installation of guardrails, fence posts, and similar boring operations is announced by Mobile Drilling, Inc.

Designated Digger, the unit is fully hydraulic and is powered by a 36-hp air-cooled gasoline engine. It features a 72-inch stroke for boring up to 24-inch-diameter holes 6 feet deep and 4½-inch holes to 75 feet.

The new drill mounts on any ¾-ton vehicle and can be secured and readied to drill in seconds. It offers four speeds forward, one reverse, and bores angle holes from 45 degrees right or left, 30 degrees fore, and 90 degrees aft of the vehicle.

For further information write to Mobile Drilling, Inc., Dept. C&E, 1244 N. Cornell St., Indianapolis 4, Ind., or use the Request Card at page 18. Circle No. 36.

Hydraulic rams offered for prestress work



Hydraulic center-hole rams, which have capacities of 30 to 300 tons and which provide long strokes—in some models up to 36 inches, are offered by the Star Jack Co., Inc.

According to the manufacturer, these rams tension prestressing cables and rods directly with practically no internal friction. Connected with hydraulic pumps, they also serve as standard jacks for lifting or pushing loads and also to pull out and replace gears, wheels, propellers, bushing, cylinder liners, shafts, etc.

For further information write to the Star Jack Co., Inc., Dept. C&E, 2638 Davisson St., River Grove, Ill., or use the Request Card at page 18. Circle No. 37.

JERSEY SPREADERS

. . . World's fastest accurate paving Spreaders!

Lay a smooth, even spread at the rate of up to 1000 tons per hour — and do it easily and economically, fast and accurately without delay to hauling units. Two models available to meet all requirements.

JERSEY SPREADER

REG. TRADE MARK

Write now for complete information and illustrated literature.

TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY 38-29

For more facts, use Reader-Reply Card opposite page 18 and circle No. 342

Increased capacity of a yard or more is the result of a design change that adds three inches to the width of Lodestar aluminum dump trailers. The extra three inches, which bring the width to 87 inches, reportedly effect no loss of vertical or lateral strength. Rigidity is increased by reinforcements of the side-panel upper flange, and by extending and attaching longitudinal I-beams to the bottom of the trailer floor. For further information write to the **Lodestar Corp.**, Dept. C&E, S. Main, Niles, Ohio, or use the Request Card at page 18. Circle No. 45.

A-W Roller-Compactor delivers vibratory and static weight compaction to 10-in. lift of stone base aggregates.

Austin-Westerns compact deeper, faster by static weight, vibration or both, to meet rigid compaction specifications

Austin-Western's Roller-Compactor combines the advantages of static weight and vibratory compaction to deliver economical precision consolidation of all type materials.

Rolls down, vibrates up

The basic 3-wheel roller unit of the A-W Roller-Compactor works from the top down. Three 240-lb. shoe attachments, vibrating approximately 2200 times per minute, work from the bottom up, filling voids and keying low level material for maximum compaction in fewest number of passes.

This roller-compactor operates at speeds up to 1 mph! Lifts of up to 12 in. of stabilized material can be compacted by successive passes without further costly surface preparation to meet density tests.

A-W 3-wheel rollers are unsurpassed for static compaction of practically all types of roadbuilding materials in lifts of 6 to 8 in. Large diameter smooth-faced steel rollers leave an even, sealed surface. Available in three variable weight models—8 to 11, 10 to 12, and 12 to 14 tons.

To roll a glass-smooth finish on macadam bases and asphalt or in surface smoothing operations, Austin-Western offers four models of tandem rollers. Weights are variable—5 to 8, 8 to 12, and 10 to 14 tons. Portable tandem model is 3½ to 6 tons.

Rugged dependability

From power unit to final drive, A-W compaction equipment is engineered for precision operation. A-W rollers are famous for rugged dependability, low maintenance.

Other features include hydraulic steering control with motor on or off; many parts interchangeable; oversize axles and antifriction bearings; gas or diesel power; choice of 2 or 4-speed transmission, torque converter standard with 2 speed, optional with 4 speed.

For full information about A-W compaction equipment, see your Austin-Western dealer today or write to us.

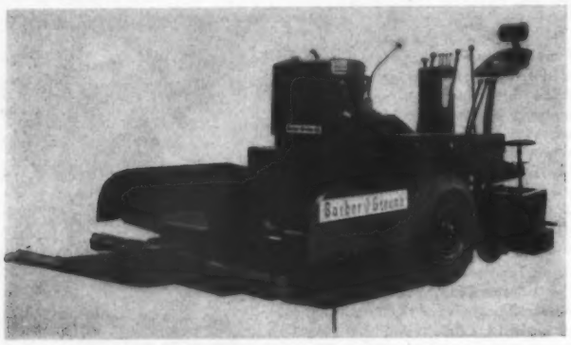
A-W Portable Tandem makes finish rolling easy, even up a hill and around a corner while keeping within ¼ in. of curb.

Austin Western — 100th YEAR — CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Reader-Reply Card opposite page 18 and circle No. 343



Barber-Greene's Model 873 asphalt finisher offers 6 to 12-foot paving widths. The unit offers the same principles of automatic leveling, compaction, and thickness control as are employed on the company's Model 879-B finisher.

Finisher paves on tracks, travels on rubber tires

A new asphalt finisher that paves on crawlers, then travels from job to job at 30 mph on rubber tires, is announced by the Barber-Greene Co.

The Model 873 offers laying widths from 6 to 12 feet, in 3-inch increments. It is equipped with power-operated, hydraulically retractable pneumatic tires and a towing tongue that may be attached in a matter of seconds. The tongue is attached to the hitch of any light truck; the machine raises itself hydraulically onto the towing wheels, bringing the crawlers free of the ground.

To achieve maximum hopper capacity and truck clearance while dumping, and at the same time avoid the danger of dead areas resulting from too little slope in the angle of the hopper sides, the machine features hydraulically raised and tilted hopper sides. This permits a flat angle for maximum capacity and clearance when receiving mix from the truck. As the feeders carry the material back to the screed, the operator can raise the sides, discharging all of the material without hand-shoveling.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 50.

Now! Another NEW "HATFUL OF SAFETY" by FIBRE-METAL

SuperLite®

ALUMINUM SAFETY HAT

SuperLite Hat "shells" are of tough aluminum alloy, tempered and ribbed for maximum resistance to blows from flying or falling objects. *SuperLite's* exclusive Polyethylene suspension gives maximum shock absorption and unmatched comfort. It is *and remains* flexible, conforms to head shape, and is deep fitting to "stay put" in any working position.

TOUGH . . . ribbed crown for highest impact resistance. ● COOL . . . reflects, does not absorb heat. Well ventilated. ● COMFORTABLE . . . men prefer and LIKE to wear SuperLite! ● ONE SIZE FITS ALL HEAD SIZES. ● NO LACING . . . exclusive design! Only headband ever needs replacing . . . a big saving! TOPS IN HYGIENE . . . easily sterilized. Waterproof. NON-TOXIC . . . mildew- and fungus-proof Polyethylene suspension. No deterioration. ● FULLY TESTED . . . to exceed highest safety standards. ● LIGHT-WEIGHT . . . trim and good looking.

NO METAL PARTS in Hat Suspension

Write for Bulletin No. 55 The FIBRE-METAL Products Company | CHESTER PENNA.

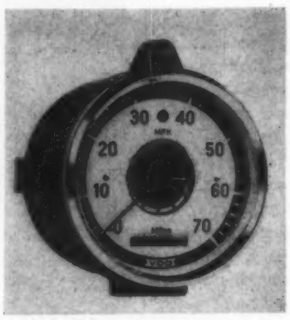
THE WORLD'S LARGEST MANUFACTURER OF SUPERIOR PROTECTIVE EQUIPMENT

For more facts, circle No. 344

Tachograph keeps records for 7 uninterrupted days

The Engler Instrument Co. offers its Model VDO tachograph.

The unit records vehicle operation in chart form, maintaining for uninterrupted periods up to 7 days a permanent, accurate record of speed and mileage, as well as showing when the vehicle is moving or stopped.



A warning light on the Model VDO flashes at any preadjusted speed.

Equipped with a warning light that flashes at any preadjusted speed, the Model VDO mounts in a dashboard opening or with a bracket.

For further information write to the Engler Instrument Co., Dept. C&E, 250 Culver Ave., Jersey City 5, N. J., or use the Request Card at page 18. Circle No. 51.

Look for FUNK'S REVERS-O-MATIC on New Equipment

One Lever DOES IT ALL

CONTROLS SPEED AND DIRECTION OF TRAVEL

● NO GEAR SHIFTING
● NO CLUTCH WORRY
● MORE WORK PER HOUR
● REDUCED MAINTENANCE

FUNK revers-o-matic DRIVES

Other Funk Products

Funk Torque Converter

Funk Right Angle Drive

HYDRAULIC CONTROLLED REVERSING CLUTCH with TORQUE CONVERTER

Look for FUNK'S REVERS-O-MATIC in any moving equipment you buy. Speed and direction of travel — forward and reverse or lift and lower — can be easily controlled by ONE LEVER or foot pedals. Torque converter prevents stall, eliminates shock and multiplies engine torque more than 200% to broaden h.p. range. Insist on FUNK equipped machines.

FUNK MFG. CO. BOX 577-B COFFEYVILLE, KANSAS

For more facts, circle No. 346

Foot-operated decelerator for tractor engines

A foot-operated decelerator for the Model D8 tractor is offered by the Caterpillar Tractor Co.

The new component, which permits an operator to slow the engine without using the hand throttle, is an optional attachment for both direct-drive and torque-converter-drive tractors. When the decelerator is released, the engine returns automatically to the hand-throttle setting.

Linkage for the foot decelerator is connected to the diesel engine governor and is entirely independent of the hand-throttle setting.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card that is bound in at page 18. Circle No. 3.

For Smooth Performance ON ALL WINTER JOBS

USE INSTO-HOT® PORTABLE LP-GAS HEATERS

● Salamanders
● Infra-Red Heaters
● Blower Heaters

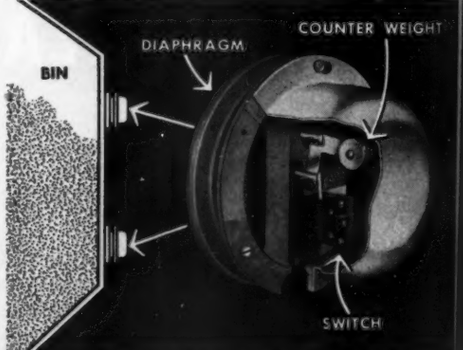
Clean, economical, dependable heat to keep construction work UP when the temperature goes DOWN. Get the facts and you'll get INSTO-HOT. Mail coupon today.

NAME _____ C&E

ADDRESS _____

INSTO-GAS CORP. ● Detroit 7, Michigan

For more facts, use coupon or circle No. 345



BIN-DICATOR® PAYS FOR ITSELF FIRST TIME IT PREVENTS BIN OVERFLOW, CONVEYOR CLOG, ELEVATOR CHOKE-UP, MACHINERY DAMAGE, REPAIR SHUT-DOWN

If you handle bulk material you probably need Bin-Dicators. The nominal cost of this protection and automatic control makes it the lowest-cost modernization you can buy. Available with Explosion-Proof Switch.

THE BIN-DICATOR CO. 13946-M Kercheval • Detroit 15, Mich. Write for free copy of catalog BD-15 or call VAlley 2-6982

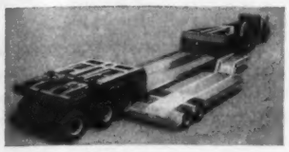
WE SELL DIRECT • PHONE ORDERS COLLECT

For more facts, circle No. 347

New equipment trailer is rated at 200 tons

First introduced to meet the special needs of a New Jersey trucking firm, the Rogers 200-ton detachable-unit trailer mounts forty 12 × 24, 14-ply tires on axles that oscillate lengthwise and crosswise to distribute the load equally.

The front gooseneck rides on a dolly to increase the number of tires, improve maneuverability, and absorb part of the load on the tractor. The trailer can be hauled with or without the dolly.



A self-powered hydraulic mechanism raises or lowers the deck for greater roadway or overhead clearance as required. The unit at the rear supplies power for steering, in addition to its use on the deck height and gooseneck removal.

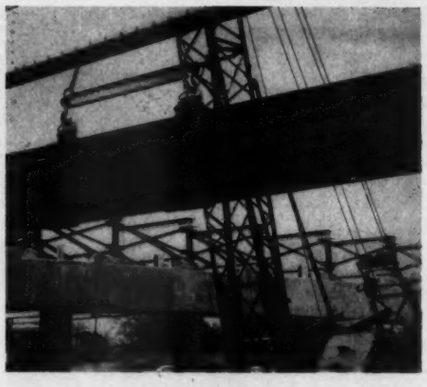
The detachable rear assembly consists of two 8-tire double-oscillating units with two removable 4-tire units attached to the walking beam.

To meet length limitations and permit faster return trips, a stub connector is substituted for the regular deck which is carried on the goosenecks. This shortens the over-all length by approximately 30 feet.

For further information write to the Rogers Bros. Corp., Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 116.

Forms said to provide automatic and instantaneous alignment in all types of slab work are offered by the Acrow Corp. of America. Known as Acrow V-forms, the units consist of three basic parts: a steel shore that can be put up by one man in a few seconds; a support beam fitted with steel pins for fast location in shore headplates below and form panels above; and a plywood form panel set in a steel channel frame. These parts can be quickly locked together even by an inexperienced worker, it is claimed. Use of these forms is said to effect a saving in labor costs. For further information write to the Acrow Corp. of America, Dept. C&E, 231 Washington Ave., Carlstadt, N. J., or use the Request Card at page 18. Circle No. 15.

Greater safety, freedom from load damage reportedly are provided during the handling of heavy bridge girders when Gripper metal-mesh slings are used. The girder shown here is over 100 feet long and weighs over 28,000 pounds. The slings are 16 inches wide and 256 inches long. According to the manufacturer, the spiral-loop construction of the metal-mesh sling will not permit it to snap suddenly and drop the load, endangering men and equipment on the job site. Freedom from load damage is provided because the sling in this choke hitch places the weight of the load on the heavier bottom flange of the girder. For further information about Gripper slings, write to **The Cambridge Wire Cloth Co.**, Dept. C&E, Cambridge, Md., or use the Request Card at page 18. Circle No. 65.

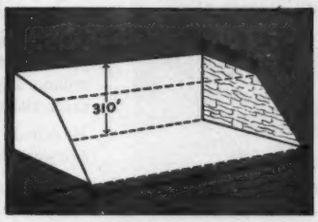


NIAGARA POWER PROJECT

Joy Challenger Drills Start Powerhouse Rock Job

Joy Challengers started drilling blastholes within 60 days after Merritt-Chapman & Scott was awarded the $99 million contract last February for construction of the main powerhouse of the Niagara Generating Plant at Lewistown, N. Y. The entire Niagara Power Project will cost $625,000,000.

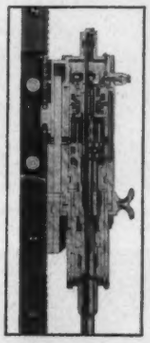
Here's the rock that must be moved



With 9,000,000 cubic yards of plant site rock to drill, M-C&S relies on Joy Challengers to get on with the CONSTRUCTION AHEAD. These Joy drifters drill 4" or 4½" diameter holes 30' deep without a steel change. Drill cycle speed and smooth operation proved Joy the best for the job.

Joy TM-500 Drills go deep

The guts of the Joy Challenger is the rugged 630 lb. TM-500, a 5¼" bore drill that combines power-packed punch and rotation with outstanding hole cleaning ability to bottom deep blastholes with ease. Features of the TM-500 include:



Force Feed Lubrication of all rotating parts.

Exclusive Joy Dual Valve for positive air control on up and down stroke of the piston.

Replaceable Bushings at all wearing surfaces including the chuck.

Joy WN-224's Supply the Air

Since M-C&S is using 5 Joy Challengers on the rock, three Joy semi-radial, four-cylinder WN-224 water cooled, two stage compressors are used for air requirements. The WN-224 is the largest package-type compressor available.

Your projects may not be Niagara size but if you're drilling rock, ask a Joy Engineer about equipment that *profits you!*

Write Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Write for FREE Bulletin 252-21

WSW C7260-252

JOY Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.

EQUIPMENT FOR CONSTRUCTION

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • TRAC-DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

For more facts, use Reader-Reply Card opposite page 18 and circle No. 348

Semiportable compressor offers 835 cfm at 100 psi

An intermediate-size stationary air compressor, which delivers up to 835 cfm at 100 psi, is announced by Atlas Copco. The 5,610-pound unit, designed for use as a stationary machine, can also be skid-mounted.

Designated AR-4, the compressor is especially recommended by the company for tunnel, hydroelectric, and construction projects where equipment must often be moved to new locations as work progresses.

Atlas Copco AR compressors feature L-shaped, 2-stage, double-acting, cross-head design, and incorporate vertical low-pressure and horizontal high-pressure cylinders. A twin-element water-cooled intercooler is located in the angle between the cylinders.

Designed for working pressures ranging from 50 to 125 psi, the AR machines may be modified for either higher or lower pressures.

The AR-4 is equipped for either V-belt drive, or direct drive from low-speed motors. It stands 6½ feet high and is 5 feet 5 inches deep and 38 inches wide.

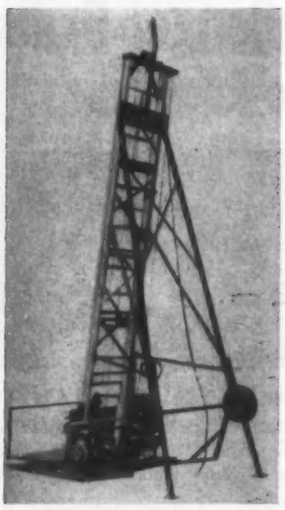
For further information write to Atlas Copco Eastern, Dept. C&E, 610 Industrial Ave., Paramus, N. J., or use the Request Card at page 18. Circle No. 25.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

New material handler is erected in minutes

An aluminum material handler that can be erected by one man in a matter of minutes is announced by the Sasgen Derrick Co.

Called Liftamatic, the unit has telescoping aluminum rails that provide adjustable unloading heights



from 13 to 40 feet, or can be supplied with either 18 or 25-foot inner sections and 16 or 25-foot outer sections.

The 1,000-pound-capacity model is available with a 7½-hp gasoline engine and centrifugal-type governing downbrake and has a line speed of 125 fpm. A 500-pound-capacity model with 80-fpm line speed features a reversible electric motor. Both models have remote control and adjustable limit stops to enable the platform to stop at predetermined loading and unloading levels.

For further information write to the Sasgen Derrick Co., Dept. CON, Dept. C&E, 3101 W. Grand Ave., Chicago 22, Ill., or use the Request Card that is bound in at page 18. Circle No. 59.

MERRITT-CHAPMAN & SCOTT GOES FOR TORQMATI ke

Shale, limestone, dolomite and sandstone combine to make the going tough. That's why blasting is almost continuous at job site.

ANY WAY you measure it—yards, dollars, kilowatts—Niagara Power Project of the Power Authority the State of New York is really big.

When completed in 1962, more than 40 million c yards of earth and rock will have been moved—over million dollars spent – more than two million kilo made available to homes and industry.

Handling a big part of that job is Merritt-Chapman & S Corporation, one of the nation's biggest construction fi

Their contract on the Niagara Generating Plant and Water Intake Structure, the project's two key sect

Loaded downgrade, empty up—that's the Niagara Generating Plant hauling story. Grades are steep as 15%.

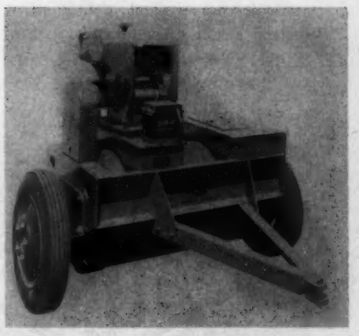
When completed, the Niagara Power Project will be one of largest sources of hydroelectric power in the Western Hemis

Ready access to the engine compartment due to swing-away fender design is one of the features of Brockway's line of Huskie trucks. The removal of two closely spaced bolts on each fender bracket permits the swing-away function. The complete removal of the fender is accomplished by disconnecting a quick-coupled electrical connection, and lifting the fender out of a swivel bracket. The Brockway units are offered in more than 30 basic models, ranging in size from basic models, ranging in size from 23,000 to over 60,000 pounds gvw. Standard engines supply from 104 to 220 horsepower, and are available in both diesel and gasoline. For further information write to **Brockway Motor Trucks, Division of Mack Trucks, Inc.**, Dept. C&E, Cortland, N. Y., or use the Request Card at page 18. Circle No. 66.

Trailing wheel kit offered for roller

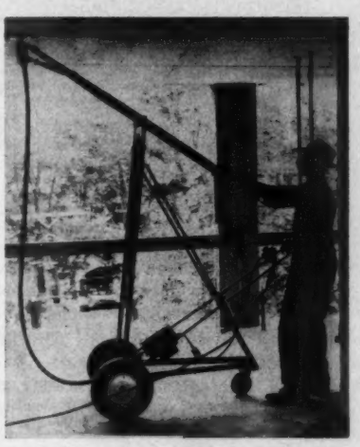
A kit that converts the Essick VR-54 high-frequency vibrating roller into a portable unit is announced by the Essick Mfg. Co.

The kit consists of two wheels with



pneumatic tires, two mounting brackets, and two roll cradles, which are easily attached to the existing frame of the roller by drilling four holes on each side. The mounting brackets can be left permanently attached, or, where close clearance is desired, they can be quickly removed.

For further information write to the Essick Mfg. Co., Dept. C&E, 1950 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 14.



A problem in finishing hardened concrete on the new 7-story Sheraton Hotel in Binghamton, N. Y., was solved by the Sardoni Construction Co. with the help of a Stow Model CG-10 ceiling grinder. Where the forms joined for the concrete floor slabs, concrete fins remained, some as much as ¼ inch thick, yet the specifications required that the ceilings be finished smooth. The top arm on the ceiling grinder was set at about a 45-degree angle. A 9-inch Bayflex disk was set at a slight angle by adjusting a turnbuckle at the top of the arm. Once the disk was adjusted, with just a slight pressure on the ceiling applied by a spring, the operator merely pushed the grinder along to cut off the fins. A 1-hp motor drives the disk at 3,450 rpm through a 9-foot flexible shaft. For further information write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 6.

...e of the equipment M-C&S has working on the Niagara Power Project's main generating plant at Lewiston, New York. TORQMATIC-...pped IHC and Euclid trucks will have moved 10,000,000 cubic yards of rock and earth in about 3 years to build the power plant.

...keep the Niagara power plant job rolling

...p to over $165,000,000. The power plant alone ...r the excavation of better than 10,000,000 cubic ...and is scheduled to be completed by early 1962.

...ives them about 1100 working days to get the job ...and to help meet this deadline Merritt-Chapman & ...has picked TORQMATIC DRIVES for its fleet ...ernational Harvester and Euclid trucks on this ...c project.

...et an idea of how fast the job is going from the ... fact that these trucks are moving 36,000 cubic ...of earth in every 24 hours, despite 15% grades ...start after only a 150-foot run.

Availability records are very high, largely because of the heavy emphasis placed on preventive maintenance by M-C&S – but also because of the ability of the TORQMATIC DRIVES to take the rough job conditions. With a lot of downhill hauling involved, the TORQMATIC Brakes are largely responsible for greatly extending regular service brake life, because it saves them for everything but full stops.

If you'd like to meet or beat your contract deadlines at a profit, take a leaf from the books of leading contractors—put TORQMATIC DRIVES to work for you.

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana

Allison ★ TORQMATIC

TORQMATIC® DRIVES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 349

Joint and crack sealer needs only one operator

A portable lightweight, one-man-operated joint-sealing unit for sealing cracks or joints in old and new concrete, as well as in blacktop, is available from the Chausse Mfg. Co., Inc.

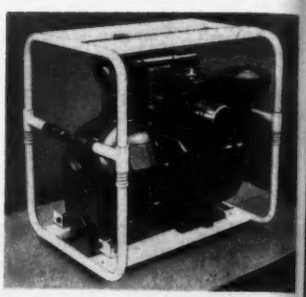
Designated Model CA-21, the machine has a capacity of 22 gallons. There are two burners on the unit. The main burner is operated automatically by a pilot light and a thermo switch; the other burner is manually set and operated by a valve and a needle valve located just outside the control box.

For further information write to the Chausse Mfg. Co., Inc., Dept. C&E, 4453 14th St., Detroit 8, Mich., or use the Request Card at page 18. Circle No. 12.

New lightweight pump boasts high capacity

A new lightweight self-priming pump designed for heavy-duty service has been added to the Hale line of Torrent pumps for construction and general-utility purposes.

Powered by a Briggs & Stratton 9-hp engine equipped with exhaust-valve rotator, the Model 30-T is said to be capable of pumping 22,000 gph,



yet weighs only 145 pounds. It is recommended for pumping water from excavations and for a variety of uses where it is necessary to move large volumes of water at low cost.

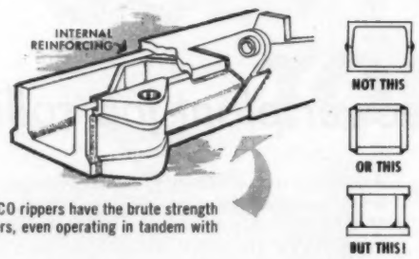
The simplified Sure-Prime design is said to eliminate the check valve and suction-hose foot valve, thus assuring fast, dependable priming on maximum suction lifts. Impeller wear adjustment can be accomplished externally without dismantling the pump. The mechanical seal is self-adjusting and self-lubricating.

The Model 30-T is available with convenient carrying handles, mounted on wheels, or in a wrap-around protective frame.

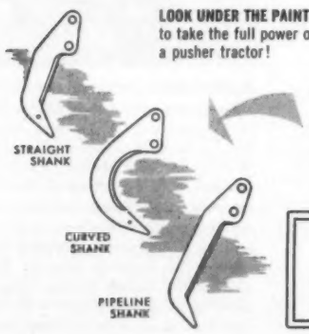
For further information write to the Hale Fire Pump Co., Dept. C&E 708–716 Spring Mill Ave., Conshohocken, Pa., or use the Request Card at page 18. Circle No. 113.

The Big Tough RIPPER For Big Tough Jobs!

LOOK AT THE RECORD of ATECO rippers on thousands of different jobs and you'll see why this pioneer of the tractor-mounted ripper field pays off in superior performance. It works in materials other rippers can't touch, shatters it into easier-loading condition, gives you bigger scraper loads faster with less scraper wear and tear.



LOOK UNDER THE PAINT and you'll see why ATECO rippers have the brute strength to take the full power of today's largest crawlers, even operating in tandem with a pusher tractor!



CHOICE OF SHANK DESIGNS — Exclusive ATECO-designed curved shank for tough rock, superior shattering action, easy penetration with lighter draft, and ability to roll rock up and out into the clear. Straight shank is especially designed for sandstone, gypsum, caliche, etc. Complete range of special-purpose points available. New "pipeliner" conversion kit takes 48" or 72" straight shank, has tandem booster frame... ideal for ripping ahead of trenchers, etc.

See the world's most complete tractor-mounted ripper line at

CONDEX, Booth 109

AED Conference, Display & Exposition • Chicago • January 25-29, 1959

DON'T MISS THE NEW ATECO PIPELINE SPECIAL!

American 44

ATECO TRACTOR EQUIPMENT

Corporation *Designers and Manufacturers Since 1920*

9131 SAN LEANDRO BOULEVARD • OAKLAND 3, CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 350

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Wire or phone for a quotation on your next foundation job — *ANYWHERE IN THE WORLD*

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For more facts, circle No. 351

Digging speeds with the Model 420 range from 15 inches to 25 feet per minute. The machine digs to a maximum depth of 7½ feet, 36 to 52 inches wide.

New trencher features 7½-foot digging depth

The Model 420 Trenchliner, designed for cross-country and other big trenching jobs, is announced by the Parsons Co.

The digging wheel of the Model 420 has three speeds—115, 215, and 300-fpm. Digging speeds range from 15 inches to 25 fpm.

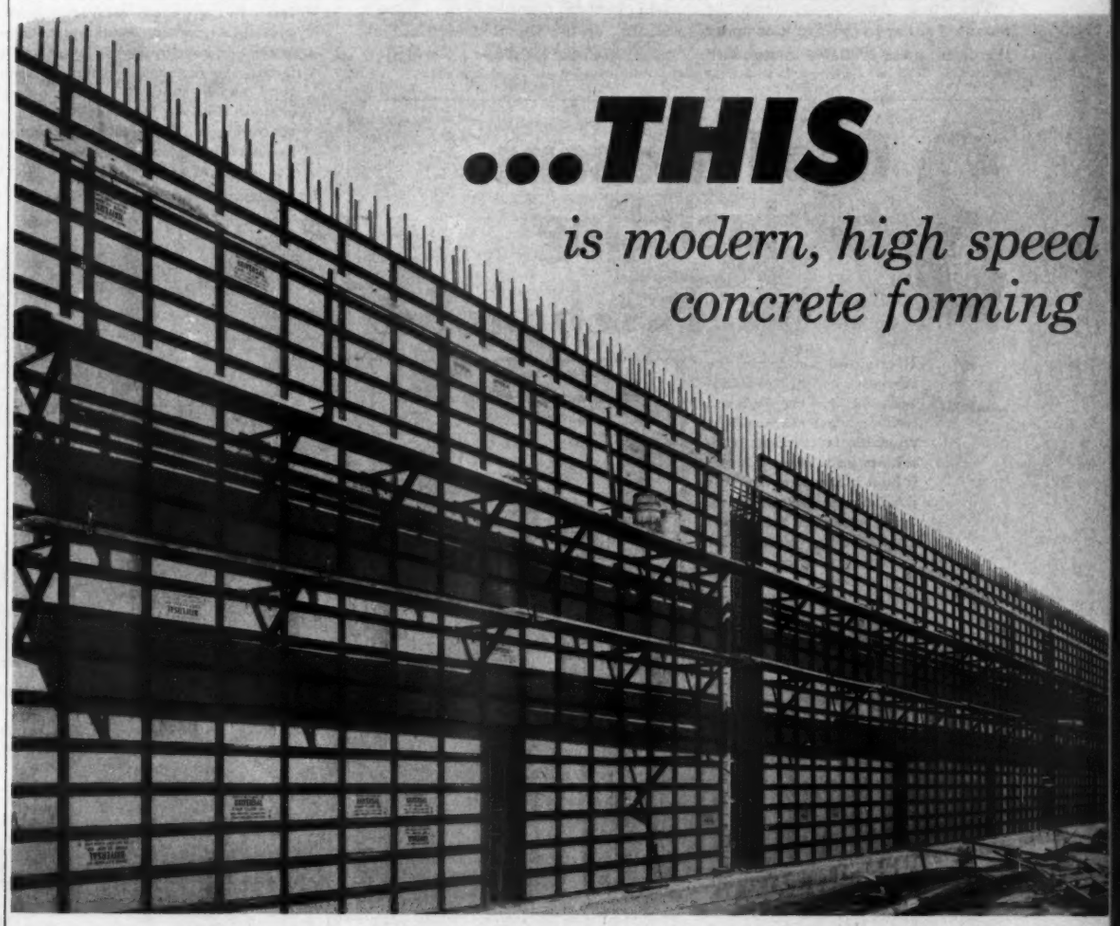
Bucket widths possible with the new machine are 36, 42, and 48 inches. Optional sidecutters to increase trench widths to 40, 46, and 52 inches are available. Maximum depth of trench is 7 feet 6 inches.

A hydraulically driven 36-inch-wide conveyor belt can be operated at 193, 378, and 621 fpm, and is reversible.

Weighing approximately 42,000 pounds, the Model 420 has traveling speeds ranging from 1 to 2.5 mph. Power is obtained from a 120-hp 1,500-rpm International Harvester diesel engine. A Caterpillar diesel engine is optional.

For further information write to the Parsons Co., Division of Koehring Co., Dept. C&E, P. O. Box 431, Newton, Iowa, or use the Request Card at page 18. Circle No. 16.

These concrete saws are cutting transverse and longitudinal control joints at Forsyth, Ga., in Monroe County. In some cases, the machines were put into action just slightly over two hours after the concrete was placed. The first big portion of Georgia's 1,100-mile share of the federal multibillion-dollar interstate highway program, the new interchange will bypass Forsyth. For further information about these concrete saws, write to the **Clipper Mfg. Co.**, Dept. C&E, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 84.



THIS IS UNI-FORMING . . . THE FASTEST GROUND-TO-GROUND SYSTEM

of concrete forming capable of handling virtually any type of poured concrete structure. UNI-FORMING is faster because assembly of UNI-FORM Panels with UNI-FORM Ties and Tie Keys is a simple mechanical (and automatically accurate) process . . . faster because minimum alignment and bracing is required on 1 side only . . . faster because every forming requirement is engineered into the system. In addition to its speed you'll find that the UNI-FORM System of concrete forming has many other advantages you can use to save time, money and labor.

UNI-FORMING HAS 3 BASIC ELEMENTS

1. The UNI-FORM Panel is plywood faced, steel framed to provide strength and rigidity plus all the advantages of a nailing surface. Made in standard heights from 1 ft. to 8 ft.; widths 2 ft., 18".

2. UNI-FORM Ties lock and spread UNI-FORM Panels. Made for all wall sizes. Special ties available.

3. UNI-FORM Tie Keys securely lock Panels and Ties together.

Want more information on the UNI-FORM System? Write for new full line catalog today.

UNIVERSAL FORM CLAMP CO.

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CONCRETE FORM SPECIALISTS SINCE 1912

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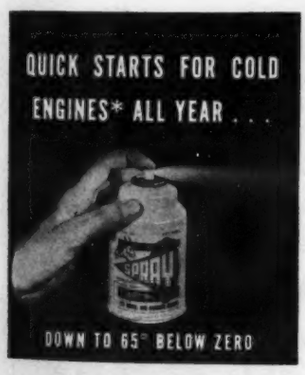
LOS ANGELES, CAL. 13210 S. Figueroa St.
CLEVELAND, OHIO 24901 Lakeland Blvd.
ATLANTA, GEORGIA 1401 Howell Mill Rd., N.W.

Universal Form Clamp Co. of Canada, Ltd., 226 Norseman St., Toronto, Ontario

For more facts, use Reader-Reply Card opposite page 18 and circle No. 353



Starting a cold engine without SPRAY STARTING FLUID is costly. Constant wear of the starting system . . . wasted man hours . . . equipment down-time . . . repeated engine strain, can be prevented with a pressurized can of SPRAY STARTING FLUID. It's so easy to use! Apply SPRAY STARTING FLUID into the air cleaner or intake air stream while cranking the engine. Continue spraying until the engine runs smoothly. Use SPRAY STARTING FLUID regularly for quick, easy and economical starting of diesel and gasoline engines. Start every work day with SPRAY!

*Until the engine reaches normal operating temperature it is a cold engine.

SPRAY PRODUCTS CORPORATION

P. O. Box 844 • Camden 1, New Jersey

For more facts, circle No. 352

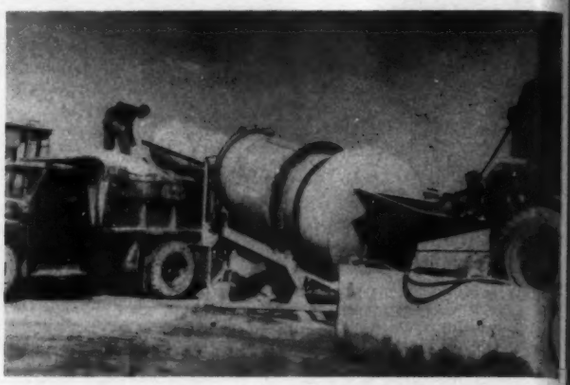
Two-way mobile radio is fully transistorized

A 2-way mobile radio with completely transistorized receiver and power supply and a partially transistorized transmitter is announced by Motorola, Inc.

The unit is designed for operation in both the low (25 to 54 mc) and the very high (147 to 174 mc) frequency bands. It provides 25 watts power output in the higher band and either 30 or 50 watts in the lower band. The receiver has an audio output of 5 watts.

The new radiophone can be mounted either in the trunk or under the dash and is available in standard (carrier squelch only) and in Dual-Squelch Private-Line (carrier and coded-tone squelch) models.

For further information write to Motorola Inc., Communications and Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 17.



This new aggregate recovery machine for disposing of left-over concrete is available from the Worthington Corp. The unit separates the aggregates of mixed concrete by means of a scrubbing action combined with gravitational forces. The cement paste that is separated is useless; however, the recovered sand may be used for future concrete if new fines are added, or used for fill or street sanding. The stone or gravel that is recovered may be used for making concrete again or for any other normal stone use. For further information write to the **Worthington Corp.**, Dept. C&E, S. Second St., Plainfield, N. J., or use the Request Card at page 18. Circle No. 157.

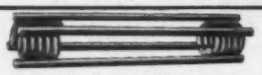
3 Good Reasons for insisting on Richmond

1. Richmond products are strength rated in our Handbook for working load and ultimate strength based on reputable independent laboratories tests. Extra strength is built in for safety and production runs are constantly tested in our own Reihle Hydraulic testing machine for uniformity and your safety.

The chart on the right, for Richmond Tyscrus, will give an example of the "extra" strength. The Tyscru is only one of the more than 400 Richmond products well known to the concrete construction industry.

T2—Tyscru 2 Strut

Nominal Diam.	Strut Diam.	Safe Load Pounds	Ultimate Strength lbs
½"	.225	6000	10,040
¾" 9 M	.312	9000	16,000
¾" 12 M	.340	12000	20,145
1"	.430	18000	27,700



T4—Tyscru 4 Strut

Nominal Diam.	Strut Diam.	Safe Load Pounds	Ultimate Strength lbs
1"	.340	24000	38,000
1¼"	.430	36000	55,000

2.

Technical service is available to you on engineering construction jobs from our large highly experienced Technical Dept. and competent field service men. Their function is to provide you with engineering data, cost estimates, placement and detail drawings, and pouring instructions.

They can show you how to save time and money and gain greater safety by using Richmond products on your job.

3. Shipping Service for your required job progress includes a system of color coding for identifying materials by colored shipping and marking tags to identify specific portions of a job in accordance with Technical Dept. schedules and packing lists. It eliminates a great deal of the 'time waste' of searching for a particular part of a shipment.

These are only some of the many reasons why it will pay you to insist on Richmond and be sure.

Write for the current Handbook describing the complete line of Richmond products. If you have a specific concreting problem, Richmond's Technical Division can help you.

INSIST ON RICHMOND AND BE SURE IT'S RICHMOND

Richmond SCREW ANCHOR CO., INC.

816-838 LIBERTY AVE. BROOKLYN 8, N.Y.
315 SOUTH FOURTH ST. ST. JOSEPH, MO.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 354

Designed to measure unknown distances from 50 feet to 3 miles, the Model-4 Geodimeter is said to be ideal for use in rough terrain when carrying out surveying tasks. The Model-4 employs a modulated light beam that is reflected by pre-established and unmanned reflectors stationed at the unknown points. The narrow reflected light beam enters the phototube multiplier, which converts the light into electrical energy. Readings are then obtained by nulling a meter by means of a graduated knob. For further information write to **The Geodimeter Co.**, Division of Berg, Hedstrom & Co., Inc., Dept. C&E, 1170 Broadway, New York 1, N. Y., or use the Request Card at page 18. Circle No. 101.

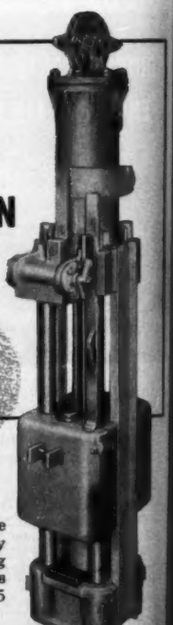
New Modern Design —Sound Engineering

produced this outstanding

WARRINGTON—VULCAN

Single-Acting

STEAM PILE HAMMER



- Heavy ribs give more support to cylinder head . . .
- Shorter channels permit easier insertion of hammer into leaders . . .

Operating at a medium steam pressure this versatile hammer delivers a moderate frequency of low velocity blows from a relatively heavy ram. A favorite for driving piles of all descriptions. Made in 6 sizes with Rated Striking Energy from 825 ft. lbs. to 30,225 ft. lbs.

Ask for full information

VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago 12, Illinois

Manufacturers of Pile Driving Hammers Since 1852

For more facts, use Reader-Reply Card opposite page 18 and circle No. 355

Clark Equipment makes key personnel changes

Alvin E. York has been appointed to the newly created post of sales manager of the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. York, former manager of parts and service, will be aided by Wendell V. Richards, assistant sales manager, who was previously product specialist manager.

B. Frank Reach, Jr., is now manager of the Central district, covering 13 states and central Canada. Paul McAdams takes on the duties of chief engineer in the division's engineering department.

Gust J. Schwanke is now manager of parts and service, and Ralph H. Hall, assistant manager of parts and service. Wallace W. Post, Jr., is the new manager of orders and distribution.

Fred Dolton is the district representative in the eastern area for the division. From Westport, Conn., headquarters, he will be responsible for sales of the Michigan line of construction and bulk material handling equipment through distributors in New Jersey and the New York City area.

Roadside development topic of HRB bulletin

The Highway Research Board has released a new bulletin on "Roadside Development, 1958". The bulletin contains papers on gravel-stabilized shoulders for turf as used on the Natchez (Miss.) Trace Parkway; and the use of urea-formaldehyde fertilizers when seeding subsoil highway slopes.

Other papers discuss seeding highway slopes as influenced by lime, fertilizer, and adaptation of species; lower-cost roadside maintenance by spraying; median design as it affects conservation of vegetation and planting for screening headlight glare and traffic guidance; and roadside development as related to the Interstate System. An appendix covers selective thinning in New Jersey.

Priced at $2, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Goodyear appoints four; enlarges district office

H. J. Mackin has been promoted to assistant manager, Eastern region, for the Industrial Products division of Goodyear Tire & Rubber Co., Akron, Ohio. Formerly the division's district manager at New York City, Mackin will retain headquarters in that city. B. E. McClelland moves up from assistant to manager of the New York City district; and H. L. Jinkerson, former Cleveland, Ohio, field representative, takes over McClelland's previous post.

The firm's district operations at Boston are now being administered from the enlarged New York City office. However, the change in administrative offices will not affect the operating policies or service in the Boston area. G. M. Landon serves the Boston district as field representative.

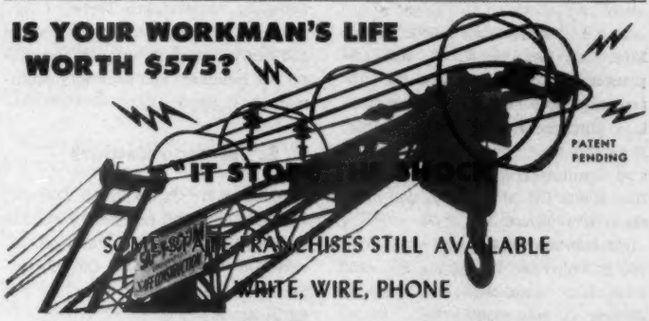
New P&H district manager

William Spelius has been named district manager of the Chicago office of the Industrial Division of Harnischfeger Corp., Milwaukee, Wis. In his new position, he will be responsible for the sales of the firm's complete line of Thru-the-Air material-handling equipment, including P&H cranes and hoists.

Spelius, former district manager of the Cincinnati office, succeeds George Artus, who is now special representative for the Industrial Division of the company.

The New York State Thruway Authority fell $900,000 short of meeting its operating and debt service expenses out of operating revenue during the first 9 months of 1958. The books were balanced by including more than $1 million earned in interest payments on money loaned.

IS YOUR WORKMAN'S LIFE WORTH $575?



"IT STOP[illegible] SHOCK"

SOME SPACE FRANCHISES STILL AVAILABLE

WRITE, WIRE, PHONE

SAF-T-BOOM CORP. 1613 MAIN, LITTLE ROCK, ARK. — FR 5-3291

For more facts, use Reader-Reply Card opposite page 18 and circle No. 357

SERVICISED

JOINT FILLERS for Concrete Paving

Three widely used Servicised Premolded Joint Fillers are briefly described below. Complete details, specifications and samples of any particular type or types are available on request.

KORK-PAK®

An exclusive Servicised development KORK-PAK consists of asphalt and granulated cork formed between two sheets of asphalt saturated paper.

advantages

1. It is non-extruding
2. Recovers more than 80% of original thickness after compression
3. Low moisture absorption
4. Readily handled without breakage
5. Least expensive non-extruding type

recommended uses A general purpose joint filler, particularly for highway work where the top of the joint can be thoroughly sealed with Para-Plastic.

ASPHALT

A composition of asphalt, vegetable fibre and a small percentage of finely divided mineral filler, formed between two sheets of asphalt saturated paper.

advantages

1. Forms an easily compressible cushion
2. Is highly waterproof
3. Low in cost

recommended uses For interior concrete floor construction where black color is not objectionable, and most extensively in the formation of contraction joints in concrete construction where a ¼" or ⅜" thickness is often used.

FIBER

Cane Fiber Joint Filler is a non-extruding, resilient bituminous material consisting of cellular cane fibers securely bound together and uniformly saturated with a suitable bituminous binder.

advantages

1. It is non-extruding
2. Ordinary carpenter saw can be used for cutting
3. Recovers more than 70% of original thickness after compression

recommended uses

An all-purpose joint filler extensively used for highway work where the upper portion of the joint can be thoroughly sealed with Para-Plastic Bituminous Rubber sealing compound. The complete line of Servicised Joint Fillers is described in the Servicised Catalog. Write for your copy.

SERVICISED PRODUCTS CORPORATION

6051 WEST 65th STREET - CHICAGO 38, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 358

LIGHTS, POWER OR WELD ANYWHERE!

NEW . . . lightweight, easy to use, easy to take to the job. Invaluable as emergency standby service.

YOU'LL SAVE HUNDREDS OF DOLLARS . . . on repair work. Fast welding repair keeps equipment working. Eliminates delays, tear downs, and waiting for expensive replacement parts.

FURNISHES 110/220 VOLT AC POWER . . . regardless of job location. Runs tools, lights, motors, etc. as easy as plugging into your regular house circuit.

HUSKY AIRCOOLED ONAN ENGINE . . . with complete control panel. Large range wheels, rheostat knob and two bus bar type welding terminals plus four 110 volt AC power receptacles and two 220 volt 3-wire twist lock outlets. This new Hobart Model GO-2245-S gives you both a welder and a power unit. A real profit-maker.

Write for complete information and prices

HOBART BROTHERS CO., BOX 819

TROY, OHIO, FE 2-1223 "Manufacturers of the world's most complete line of arc welding equipment."

SEND INFORMATION AND PRICES ON . . .

☐ Model GO-2245-S
☐ Model GPB-258-S
☐ Model GB-318-S
☐ Model SP-418-W

Name_____

Address_____

City_____ Zone____ State_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 356

Distributor Sales

Three new Trojan dealers

The Trojan Division, Yale & Towne Mfg. Co., Batavia, N. Y., has appointed three distributors for its tractor-shovel line. The Intermountain Equipment Co., P. O. Box 151, Pocatello, Idaho, will cover that state; and Capitol Tractor & Equipment, Inc., Route 150, Morton, Ill., will handle central Illinois.

Contractors Equipment Co., Inc., 780 E. Third St., Lexington, Ky., will serve that state. The dealer has a branch at 4410 Poplar Level Road, Louisville.

McKiernan-Terry dealer

The Parker Equipment Co., 29 E. 2nd St. S., Salt Lake City, Utah, has been appointed exclusive distributor for that state by the Pile Hammer Division, McKiernan-Terry Corp., Dover, N. J. The dealer will handle the firm's line of steam, air, and diesel pile hammers and accessory equipment.

C. S. Johnson dealers

Jacobs-Kerr & Co., 1950 31st St., Denver, Colo., will carry the complete product line of the C. S. Johnson Co., subsidiary of Koehring Co., Champaign, Ill. Jacobs-Kerr will cover the entire state.

The G. C. Phillips Tractor Co., Inc., 4419 First Ave. N., Birmingham, Ala., has been appointed an exclusive distributor of Johnson transit-mix plants, concentric batchers, batch recording systems, Econoplants, clamshell buckets, and portable batch plants on wheels. The dealer will cover all of Alabama and that part of Florida west of the Apalachicola River.

Worthington names dealers

Two new distributors have been appointed by Worthington Corp., Harrison, N. J. Lumby Machinery Co., 6541 Forest Park Road, Dallas, Texas, will carry its truck mixers, big mixers, pavers, and portable mixers throughout the state.

P-D Service Syracuse Corp., Bridge St., East Syracuse, N. Y., will handle rotary compressors, contractors' tools and pumps, and mobile drills in 32 New York counties.

Southwest Equipment Co., 2242 E. Washington St., Phoenix, Ariz., will handle the firm's line of truck, big, and portable mixers; contractors' pumps and tools; pneumatic placers; pavers; and portable compressors. The dealer will cover 14 Arizona counties.

Euclid dealer appointed

Square Deal Machinery Co., of Orlando, Jacksonville, and Miami, Fla., has been named a dealer for the Euclid Division, General Motors Corp., Cleveland, Ohio. Square Deal Machinery will handle the complete line of Euclid earthmoving equipment in all Florida counties except those west of the Apalachicola River.

Kwik-Mix appoints dealer

The Hayden-Murphy Equipment Co., 4501 Hiawatha Ave., Minneapolis, Minn., has been named a distributor by the Kwik-Mix Co., Division of Koehring Co., Port Washington, Wis. The dealer, which will cover the southern part of the state, offers the complete line of Kwik-Mix bituminous, plaster-mortar, and concrete mixers, the Moto-Bug material-handling unit, and the Hi-Lifter for truck.

Metalweld promotes

Walter T. Senkowski, former manager of industrial sales, has been appointed sales manager of the Construction Equipment Division, Metalweld, Inc., Philadelphia, Pa. In his new position, Senkowski will direct the sale of heavy equipment to both contractor and industrial accounts in the dealer's territory.

For Trench Filling . . .

Power-Pack is your best bet!

Back-filling trenches with select material can be done more economically with a Model 600 or 610 Power-Pack than with any other equipment. Sand, aggregate or other select material can be placed up to 4′ from the pavement by the Model 600—over obstructions up to 7″ high. For trenches as much as 8′ from the truck and 3′ above horizontal, the Model 610 tandem conveyor does the job . . . the 4′ extension can be removed in just a few minutes when the extra length or height isn't required.

Road Widening and Shoulder Work . . .

Faster and Cheaper with a Power-Pack

You'll finish your jobs with more profit if you use a Power-Pack Hopper Conveyor for placing sand, aggregate and hot mix. This multi-purpose machine requires only one operator and minimizes manual cleanup. The conveyor is easily changed for right or left side discharge—working width of under 12′ permits you to maintain traffic without slowing down your work.

Model 605 has 42″ strike-off box that is adjustable from 2′ to 5′ from edge of pavement . . . provides a smooth flow of material up to 180 tons per hour.

Keep your larger, more costly equipment on other work while Power-Pack protects profits on your road widening, shoulder and trench filling operations. Write or phone for information now!

Distributorship available in some areas

POWER-PACK CONVEYOR CO.

836 EAST 140th STREET, GLenville 1-7670 CLEVELAND 10, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 359

SAVE TIME—PREVENT TROUBLE

WITH AMERICAN ALL-STEEL PILE SHOES

They are easy to apply

They fit the pile

They are strong

They can't come off

They have sharp, solid-steel points

With American Pile Shoes, piles drive easier, faster, will not "broom", and provide full load-bearing capacity. Write for data and prices.

The American Pulley Company

4200 Wissahickon Avenue
Philadelphia 29, Pennsylvania

For more facts, circle No. 360

Caterpillar holds meeting for its dealerships

Top personnel of Caterpillar dealerships in the United States and Canada gathered last month for a sales conference at the Phoenix, Ariz., proving grounds of Caterpillar Tractor Co., Peoria, Ill. The purpose of the 4-day meeting was to familiarize the group with the newest machines in the Cat line, to outline plans for merchandising, and to review the business outlook. More than 280 representatives from 128 Caterpillar dealerships attended the conference.

At the morning sessions, dealers were given detailed information on the special features and operating capabilities of the equipment. In the afternoons, demonstrations of the machines and a tour of the 8,640-acre research facilities were featured.

Buffalo-Springfield news

McClung-Logan Equipment Co., Inc., 4601 Washington Blvd., Baltimore, Md., has been appointed a distributor of the complete line of rollers made by the Buffalo-Springfield Roller Co., Division of Koehring Co., Springfield, Ohio. The dealer will cover the District of Columbia, Maryland, five Virginia counties, and the city of Alexandria, Va.

Madsen names dealer

The Edward C. Flaherty Co., 43-87 Vernon Blvd., Long Island City, N. Y., has been appointed an exclusive distributor for the Madsen Works, Baldwin-Lima-Hamilton Corp., Construction Equipment Division, La Mirada, Calif. The dealer will handle sales and parts service for Madsen asphalt plants and equipment in all of the New York counties south of and including Sullivan, Ulster, and Dutchess.

B-E names distributor

Field Machinery Co., 300 Binney St., Cambridge, Mass., has been appointed a distributor by Bucyrus-Erie Co., South Milwaukee, Wis. The new distributor will offer service and sales on 5 and 12-ton-capacity Hydrocranes; ⅜ and ½-yard Hydrohoes; and Hydroshovels. Field Machinery will cover Rhode Island, ten Massachusetts counties, and six New Hampshire counties.

Parker Seal appoints

The Parker Seal Co., a division of Parker-Hannifin Corp., Cleveland, Ohio, has appointed Dixie Bearings, Inc., 276 Memorial Drive S. W., Atlanta, Ga., a franchised distributor for its industrial Gask-O-Seals for pipe flanges and industrial Stat-O-Seals for bolts and other fasteners. The dealer has branches at Jacksonville, Fla.; Louisville, Ky.; Baton Rouge and New Orleans, La.; Charlotte and Greensboro, N. C.; Greenville, S. C.; and Chattanooga, Kingsport, Knoxville, and Nashville, Tenn.

Cleaver-Brooks appoints

J. Mel Brown Co., Smoot Bldg., 2046 S. 11th East St., Salt Lake City, Utah, has been appointed boiler sales representative for Cleaver-Brooks Co., Milwaukee, Wis. The new dealer will cover Utah, Nevada, southwestern Wyoming, central and southern Idaho, and Malheur County in Oregon.

Clark names distributor

West India Machinery & Supply Co., San Juan, Puerto Rico, has been appointed a distributor for the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. Located at Roosevelt Ave. and 26th St. (P. O. Box 2432), the new dealer will sell and service Michigan construction and bulk-material-handling equipment in the Virgin Islands.

New dealer for I-H

Truck sales and service facilities for International Harvester Co., Chicago, Ill., have been expanded in the South with the opening of a new McCormick Farm Equipment Store, 3003 MacArthur Drive, Alexandria, La.

IF IT'S A
WET
JOB
let Griffin
analyze your ground
water problem and
estimate costs

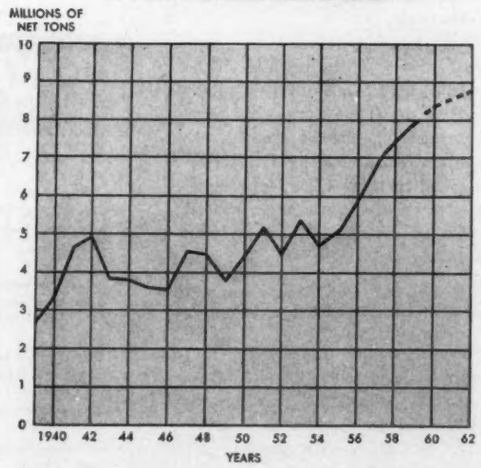
GRIFFIN
WELLPOINT CORP.
SALES • RENTAL • CONTRACT
881 E. 141st St., New York 54, N.Y.
Jacksonville, Fla. • Houston, Tex.
W. Palm Bch., Fla. • Hammond, Ind.

For more facts, circle No. 361

MORE structural steel is available- now and in the years to come

In 1959 builders of highways, bridges and buildings will have available more steel than ever before. The steel industry (and Bethlehem Steel in particular) has expanded facilities for producing structural shapes so that there *is* steel for the job.

RISE IN STEEL INDUSTRY'S PRODUCTION OF HEAVY STRUCTURAL SHAPES



We estimate the industry will be able to turn out 8 million tons of structural steel in 1959. What's more, it is estimated that anticipated expansion will bring the industry's capacity up to 9 million tons annually by the mid 1960's.

BETHLEHEM INCREASES CAPACITY

Since our Bethlehem, Pa., plant is the largest single unit producing structural shapes in the country, its role is a most important one.

In 1955, for example, we were caught in a squeeze. We had foreseen the increased demand and had already started a huge expansion program a year earlier. Expansion on such a major scale required the shutting down of some facilities, and just at that critical period, the boom hit. So while we were in the midst of trying to relieve the shortage of the future, we were temporarily unable to turn out as much as before.

But it all paid off. Today Bethlehem is able to turn out over 3 million tons of shapes each year, or about 40 per cent of the entire industry's total.

Structural steel *is* available. You can plan and design in structural steel with complete assurance, both now and in the years to come.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

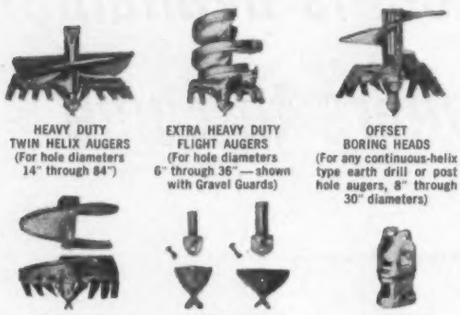
BETHLEHEM STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 362

CONCRETE POURING FOR AN AMMUNITION STORAGE BUILDING is only one of three jobs handled by the Michigan Model T-24 excavator crane on this project at Malmstrom Air Base, Great Falls, Mont. The rig also placed structural steel and timber forms for the four ammunition buildings, which are being constructed under an $897,000 contract by Sletten Construction Co., also of Great Falls. A total of 4,200 cubic yards of concrete was poured for the buildings and 14 end walls.

PENGO AUGERS

...the most profitable tools you can buy!



HEAVY DUTY TWIN HELIX AUGERS (For hole diameters 14" through 84")

EXTRA HEAVY DUTY FLIGHT AUGERS (For hole diameters 6" through 36" — shown with Gravel Guards)

OFFSET BORING HEADS (For any continuous-helix type earth drill or post hole augers, 8" through 30" diameters)

HEAVY DUTY OFFSET BORING HEADS

SCREW BITS FOR SMALL HOLES

PENGO SCREW ANCHOR TOOL

Write today for complete PENGO catalog of profit-making augers and accessories; please address Dept. A1.

PETERSEN ENGINEERING CO., INC.
Santa Clara, California

For more facts, circle No. 363

Waukesha buys Le Roi, Climax engine business

The complete plant and assets of the Climax Engine Mfg. Co., Clinton, Iowa, and the engine business of the Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis., have been purchased by the Waukesha Motor Co., Waukesha, Wis. Although no real estate was involved in the original Le Roi purchase, Waukesha Motor has made arrangements to take over the Le Roi warehousing and sales-office facilities in Tulsa, Okla.

The acquisition of the two engine lines will give Waukesha Motor a wider field of application for its products, particularly in the oil and construction industries.

Chrysler engine division opens 50 service centers

The Marine and Industrial Engine Division, Chrysler Corp., Detroit, Mich., has established a network of 50 engine centers throughout the country. The division's dealers within a center's territory operate under the center itself.

The engine-center locations have been selected on the basis of engine population throughout the country and are placed to reduce service time to a minimum for the customer. In addition to maintaining a large engine and parts inventory, each center has a service shop and provides trucks and personnel for on-the-spot service.

Cummins personnel news

The Cummins Engine Co., Inc., Columbus, Ind., has appointed G. W. Paine manager of its Canadian region, with headquarters in Toronto. G. H. Weaver has been named representative for that region. From headquarters in the firm's Northwest regional office in Seattle, Wash., Weaver will be responsible for sales and service coverage in the provinces of British Columbia and Alberta.

J. J. Studenic is the new manager of the Southwest region, with headquarters in Los Angeles, Calif. D. L. Campbell has been named representative in the Eastern regional office in New York City.

WACHS *Portable*
POWER AND MANUAL PIPE CUTTERS
2" TO 72" CAPACITY

WACHS GUILLOTINE SAW
2" to 8" Capacity
Electric or Air Drive

"BIG" GUILLOTINE SAW
10" to 16" Capacity

WACHS NATIONAL SAW
"The milling machine on wheels"
Cuts 10" to 72" Pipe

WACHS STRICKLER RATCHET CUTTER
"Lathe Type Cuts"
5 sizes—2½" to 24" Capacity

Write for descriptive bulletins

THE E. H. WACHS COMPANY
1525 NORTH DAYTON STREET CHICAGO 22, ILLINOIS

For more facts, circle No. 364

The Engler HUBODOMETER measures mileage accurately

for
- Interchange of Equipm
- Leasing or Rentals
- Warranty Programs
- Tire Mileage
- Preventative Maintena
- Ton Mile Regulation

EASILY INSTALLED on trailers, trucks, & buses
ENGLER ORIGINATED & DEVELOPED
- **Accurate** and **Durable**
- **Completely** Hermetically sealed
- **Easy** to read as figures are always upright
- Field tested by **10** years of use
- **Universally** accepted by fleets and O.E.M. manufacturers

Distributed by truck and trailer branches and leading pa suppliers.

Available on new equipment at all truck and trailer ma facturers.

Engler Instrument Co
Dept. CE-1. 250 Culver Avenue, Jersey City, N. J.
Phone HEnderson 4-6500

For more facts, circle No. 365

ESCO FLARE TRANSISTOR LIGHTS

"The Brightest of Them All"

- Heavy-duty hermetically sealed transitor unit—even operates under water.
- Exclusive Economy Battery in Jumbo models gives 50% more battery life for same price as others.

Jumbo 7" Light

- Lower initial cost. Troublefree operation makes it economical to operate.
- Heavy-duty case and die cast head.
- Exclusive troublefree switch built right in head.
- Esco Flare Barricade for Jumbo and Deluxe models.

DeLuxe 7" Light

- Exclusive features make Esco Flare the best transistor light you can buy—and there's one for every requirement.

Write for literature and prices. Distributorships available.

FULLY GUARANTEED

ELECTRONIC SPECIALTIES COMPANY
BATAVIA 12, ILLINOIS

For more facts, circle No. 366

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Tunnel liner plates—a brochure describing steel tunnel liner plates from the Commercial Shearing & Stamping Co. Data on how to specify; general-purpose load tables; tables that suggest thickness of liner plates for use in tunnels under railroads and highways. Photos; diagrams; case histories. Bulletin 300-Cl.

Write to the Commercial Shearing & Stamping Co., Dept. C&E, 1775 Logan Ave., Youngstown, Ohio, or use the Request Card at page 18. Circle No. 158.

Trucks, engines—a catalog illustrating the complete Reo line of trucks and engines. Indicates weight classifications, general applications, and major components available. Provides a special description of the firm's replaceable wet-sleeve cylinder construction and gives data on rebuild kits for these engines.

Write to Reo Division, The White Motor Co., Dept. C&E, Washington Ave., Lansing 20, Mich., or use the Request Card at page 18. Circle No. 5.

Scaffold hardware—a catalog from Superior Scaffold Co. showing the firm's complete line of scaffold hardware. Profusely illustrated; contains many erection tips and job applications. Catalog CF-136.

Write to the Superior Scaffold Co., Dept. C&E, 5624 Bankfield Ave., Culver City, Calif., or use the Request Card at page 18. Circle No. 11.

Chain—an illustrated catalog describing several types of Columbus McKinnon steel chain and chain attachments for a wide variety of uses. Photographs illustrate text. Specifications included.

Write to the Columbus McKinnon Chain Corp., Dept. C&E, 6067 Fremont Ave., Tonawanda, N. Y., or use the Request Card at page 18. Circle No. 23.

Pipe-laying equipment—a pamphlet describing the part played by Caterpillar equipment in three pipelaying jobs. Tells how one company used D9's with rippers to speed trenching through rock; how another put two No. 583 pipelayers on a barge to lay 57 miles of pipe, almost entirely under water; and how still another cleared 210 miles of rough timber country in one instead of two years with two D8's and six No. 955 Traxcavators. Action photos. Form DE836.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 64.

Rotary portable air compressor—a bulletin describing the Le Roi 365 rotary portable air compressor. Details the major features of the unit. Photographs, general specifications included. Bulletin No. P-121B.

Write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 1706 S. 68th St., Milwaukee 13, Wis., or use the Request Card at page 18. Circle No. 67.

Rubber-tire tractors—a catalog covering the complete International Harvester line of wheel tractors offered in six sizes ranging from 12 to 72.5 horsepower. Details special features and gives specifications for each unit. Illustrated with photographs. Catalog CR-1374-H.

Write to the International Harvester Company, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 21.

Plows, spreaders—a brochure on Good Roads plows and spreaders for snow and ice removal; Handy aggregate spreader for up to 3-inch depths; and Odell aggregate and asphalt spreader for depths to 8 inches. Also contains data on units for removing leaves and litter. Photographs, drawings illustrate text.

Write to the Good Roads Machinery Corp., Dept. C&E, Minerva, Ohio, or use the Request Card at page 18. Circle No. 75.

Pile hammers—a bulletin on the selection and application of Vulcan single-acting pile hammers designed to use steam or air, with rated striking energy from 7,260 to 30,225 foot-pounds. Deals with many subjects such as rating of hammers, selecting size required, safe bearing load for piles, adaptability for driving, bases, plates, driving heads, helmets, and head blocks. Bulletin No. 68-F.

Write to Vulcan Iron Works, Dept. C&E, 327 N. Bell Ave., Chicago 12, Ill., or use the Request Card at page 18. Circle No. 71.

Concrete forms—a folder describing the FormCo concrete-form method, said to eliminate conventional studs and wales. On-the-job photographs show the forms in use on a variety of work.

Write to FormCo, Inc., Dept. C&E, 1916 13th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 30. *(Continued on next page)*

500 Sweeping Hours From ONE... DANLINE* Brush

Toss away those old fibre sweeping brooms and replace with a Danline wire brush — once — let your sweepers do a thorough job. You'll get up to 3000 sweeping miles from one Danline, and you'll get it at less than 10 cents per sweeping mile . . . Danline's engineered construction allows rapid assembly — uses special round brush wire — already proved on the toughest industrial jobs . . . Two men, in less than twenty minutes, can easily assemble a Danline . . . A Danline brush can remove 10" of sand in a single pass! . . . *For a really clean sweep,* test one on your own sweeper.

*U.S. Pat. 2864112

Newark Brush Company.

59-2

260 MICHIGAN AVENUE
KENILWORTH, NEW JERSEY

NEWARK

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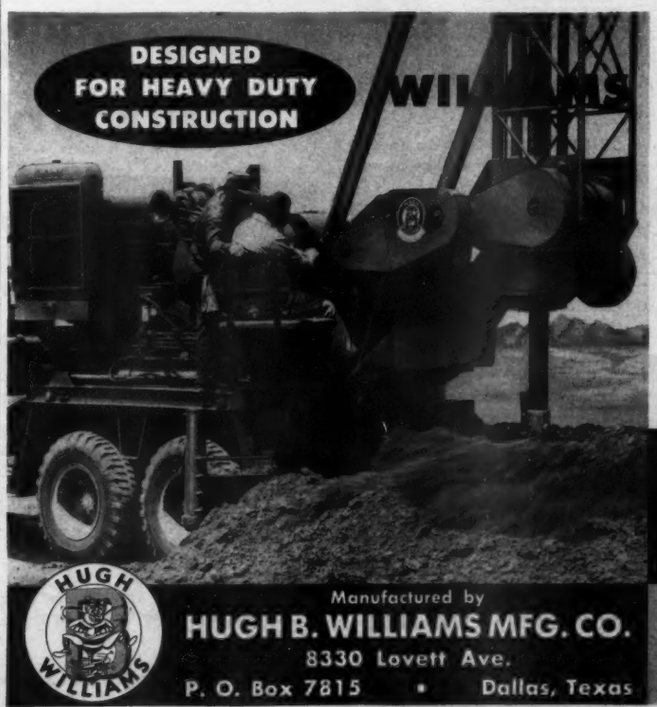

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500 Cubic Inch Engine
96 Inch Hole Diameters

Williams Diggers have been proven on the toughest jobs, under the roughest conditions, by the most rugged operators in the construction business. They have to be good, ask the man who runs one.

4 DEPENDABLE MODELS
40 · 45 · 50 · 55
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for DESCRIPTIVE LITERATURE

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"BERG" CONCRETE SURFACERS

for: bridges, highways, airport runways, dams, culvert, floors, walls.

Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

CONCRETE SURFACING MACHINERY CO.

4665 Spring Grove Avenue Cincinnati 32, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 368

Doing It the Easy Way with SIMPLEX JACKS...

PRESTRESSING CONCRETE SLAB with a Simplex Re-Mo-Trol 30-ton hydraulic puller. When cured, 26' x 38' slab will be raised to form third story floor of school building. Intervening floors will then be cast, prestressed and raised into position. Only Re-Mo-Trol gives straight-line pull to prestressing wires through unique "center-hole", eliminates need for complicated back-up devices. Also has many uses as a powerful lifting jack on construction jobs.

15-TONS OF LIFT on either the cap or toe of this Simplex Model 24A jack is a feature that construction men like. Full capacity toe lets them lift from minimum clearances, cuts wedging and blocking necessary. Jack is ratchet lowering lever type; raises or lowers notch-by-notch —can't be tripped. 13" of lift.

TIMBER "STRETCHER" speeds shoring on foundation and tunneling work. Simplex Shoring Jacks, available in 25-ton or 35-ton sizes, are faster and safer than old-fashioned saw and wedge methods.

WHEN YOU'RE DOWN A HOLE you can feel safe with these Simplex Trench Braces on the job. Made entirely of drop forged steel. Easy to adjust, grip at any angle, can be nailed to timber for slip-proof safety. For any width trench.

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX JACKS

SIMPLEX CONSTRUCTION JACKS are fully described in General Catalog. Write for a free copy.

TEMPLETON, KENLY & CO.

2511 Gardner Road • Broadview, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 369

To obtain the literature described on this page—
———write direct to the manufacturer or circle the designated number on the Request Card at page 18.

(Continued from preceding page)

Gang vibration—a bulletin on Stow machines for deep slab internal gang vibration. Covers the firm's BUSP electric vibrators, mounting frames, brackets, and generators. Illustrated with on-the-job photographs of the assembly with 10 vibrators for a 25-foot-width slab on an airport runway. Gives complete information for selecting the right combination of components for any width slab. Bulletin No. 5820.

Write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 81.

Portable vehicle scales—a folder describing the construction and operating characteristics of Howe portable self-contained vehicle scales. Brief specifications for several models ranging in capacities from 20 to 70 tons. Photographs and drawings.

Write to The Howe Scale Co., Dept. C&E, 2951 Scale Ave., Rutland, Vt., or use the Request Card at page 18. Circle No. 19.

Steel strand for prestressing—a bulletin listing the benefits of Bethlehem stress-relieved strand for prestressed concrete. Describes the process by which the strand is made. Typical stress-strain curves included among illustrations. Data on standard reel dimensions and capacities.

Write to the Bethlehem Steel Co., Dept. C&E, 701 E. Third St., Bethlehem, Pa., or use the Request Card at page 18. Circle No. 20.

Rims, wheels—a 94-page catalog on Goodyear rims, wheels, tools, and rim accessories. Includes information and pictures on rim research, step-by-step procedure for mounting and demounting rims, and operating instructions for using hydraulic tools.

Write to the Goodyear Tire & Rubber Co., Metal Products Division, Dept. C&E, 1144 E. Market, Akron 16, Ohio, or use the Request Card at page 18. Circle No. 99.

Vibratory roller—a folder describing the Rosco Vibrapac 2-ton vibrating-type roller. Includes on-the-job photographs and specifications.

Write to the Rosco Mfg. Co., Dept. C&E, 3118 Snelling Ave. S., Minneapolis 6, Minn., or use the Request Card at page 18. Circle No. 35.

Abrasion-resistant slings—a catalog of Macwhyte cable-laid and rope-laid Safe-Guard slings. Gives specifications, load ratings, and standard fittings for sizes from ¼ inch to 1½ inches in diameter. Photographs included. Bulletin No. 5886.

Write to the Macwhyte Wire Rope Co., Dept. C&E, 2940 14th Ave., Kenosha, Wis., or use the Request Card at page 18. Circle No. 40.

Portable heaters—a catalog describing the three types and nine models of Insto-Gas portable heaters for operation with LP gas. Data on accessories. Photographs illustrate text.

For further information write to the Insto-Gas Corp., Dept. C&E, 980 E. Woodbridge Ave., Detroit 7, Mich., or use the Request Card at page 18. Circle No. 43.

Two-way radios—a booklet describing the complete General Electric line of 2-way radio and optional types of equipment available for individual system flexibility. Covers transistor-powered models, as well as those powered by vibrators and dynamotors.

Write to the General Electric Co., Communication Products Dept., Dept. C&E, Charles Bldg., P. O. Box 221, Liverpool, N. Y., or use the Request Card at page 18. Circle No. 61.

Tachographs—literature describing Wagner Sangamo Models AA (mph) and BB (rpm) tachographs for recording on charts the speed of a vehicle in mph, or engine rpm; distance traveled, or total engine revolutions; running, idling, or stopping of engine. Sample chart analysis. Photographs and drawings.

Write to the Wagner Electric Corp., Dept. C&E, 6400 Plymouth Ave., St. Louis 14, Mo., or use the Request Card at page 18. Circle No. 22.

NEW SOIL SAMPLING BOOK AVAILABLE!

★ 68 Pages ★ 16 Chapters
★ Over 100 Photos and Drawings

Here's a non-technical book that provides 68 illustrated pages of the latest methods, procedures and tools for sampling.

This is a "how to" book—an easy-to-follow guide for the builder, construction contractor, civil engineer or architect. If you need fundamental soil sampling information, this book is for you.

For only $1.00, a fraction of the preparation and printing costs, we'll rush you a postpaid copy of "Basic Procedures of Soil Sampling." If not completely satisfied, return the book within seven days for full refund.

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Here's my check for $1.00. Rush me a copy of "Basic Procedures of Soil Sampling."

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To obtain the literature described on this page—
——write direct to the manufacturer or circle the designated number on the Request Card at page 18.

Rotary air compressor—a folder on the Davey 100-hp heavy-duty rotary air compressor for 100-pound service. Illustrates the principle of multiple-stage rotary compression, and lists several features of the Davey unit. Specifications.

Write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 132.

Portable pumps—an illustrated bulletin on Rice portable self-priming centrifugal pumps. Covers several models, giving capacities and specifications for each. New diaphragm pumps also featured. Data on mounting options. Bulletin CP1-17.

Write to the Rice Pump & Machine Co., Dept. C&E, 400 Park Ave., Belgium, Wis., or use the Request Card at page 18. Circle No. 133.

Asphalt additives—a booklet entitled "Why Use a Heat-Stable Asphalt Additive?" Gives a nontechnical explanation of the difference between fugitive and heat-stable asphalt antistripping additives, as well as the performance and economics of using each type.

Write to the Carlisle Chemical Works, Inc., Dept. C&E, Reading, Ohio, or use the Request Card at page 18. Circle No. 134.

Fiberboard forms—a brochure describing Formavoid fiberboard void forms designed for use in lift-slab, poured-in-place, and precast, prestressed-concrete construction. Applications in these specialties described and illustrated. Charts and formulas describe typical uses of these void forms.

Write to the Container Corp. of America, Dept. C&E, 2001 E. 57th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 135.

Side-dump shovel—literature on the Isaksen side-dump shovel. Stresses the benefits of the unit in tight work, as well as time savings through a faster load-dump cycle. Drawings illustrate text.

Write to the Lynn Mfg. Co., Dept. C&E, 1121 S. Seventh St., Minneapolis 4, Minn., or use the Request Card at page 18. Circle No. 136.

Heavy-materials handler — a folder on Travelifts. According to the literature, the self-propelled, hydraulically operated units are available in 15 models with rated capacities up to 100,000 pounds. Stresses the maneuverability of the machines, and especially their application in prestressed-concrete plants. Illustrated with photographs.

Write to Travelift & Engineering, Inc., Dept. C&E, Sturgeon Bay, Wis., or use the Request Card at page 18. Circle No. 137.

Compaction equipment—a bulletin on the entire Buffalo-Springfield line of road rollers and compaction equipment. Text well illustrated with photographs. Condensed specifications for all models included. Bulletin No. S-74-858.

Write to the Buffalo-Springfield Roller Co., division of Koehring Co., Dept. C&E, 1210 Kenton St., Springfield, Ohio, or use the Request Card at page 18. Circle No. 138.

Truck-mounted crane—a booklet describing the Lorain Model 107, a 7 to 8-ton truck-mounted crane, convertible to shovel, dragline, clamshell, or hoe. Well illustrated with on-the-job photographs and close-ups of major components.

Write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 72.

Concrete routing, joint cleaning—a fact sheet on the Tennant Model G concrete-routing and joint-cleaning machine. Lists the many benefits claimed for the unit and is illustrated with on-the-job photographs. Includes specifications.

Write to the G. H. Tennant Co., Dept. C&E, 701 N. Lilac Drive, Minneapolis 22, Minn., or use the Request Card at page 18. Circle No. 68.

Asphalt compactor — an illustrated fact sheet on the Lucas portable asphalt roller and tamper, designed for use in places inaccessible to conventional-type rollers. According to the literature, the self-propelled unit requires only one operator. Photos and specifications.

Write to the Lucas Asphalt Compactor Co., Dept. C&E, 2209 E. Market St., Stockton, Calif., or use the Request Card at page 18. Circle No. 139.

Ice-melting chemical—a bulletin on Speco's Ice Rem Super ice-melting chemical. Includes a general discussion of ice problems and data on proper control methods. Bulletin MM-8196.

Write to Speco, Inc., Dept. C&E, 7308 Associate Ave., Cleveland 9, Ohio, or use the Request Card at page 18. Circle No. 140.

Submerged-arc tandem welding—a bulletin describing in detail the process of multiple-electrode submerged-arc tandem welding and the advantages of this method over single-arc welding. Information on requirements and application opportunities, as well as commonly used equipment arrangements. Bulletin 5200.2.

Write to the Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 141.

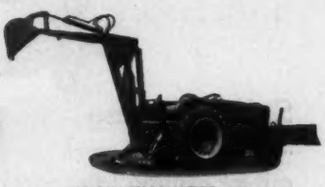
V-belt drives—an illustrated manual, "How to Get Longer Life from V-Belt Drives". Tells how to select and install V-belts, how to detect V-belt trouble, diagnose belt failures, correct drive troubles. Contains a list of valuable tips for proper V-belt maintenance, as well as a suggested inventory survey check list for V-belt drives.

Write to the B.F. Goodrich Industrial Products Co., Dept. C&E, 500 S. Main St., Akron 18, Ohio, or use the Request Card at page 18. Circle No. 142. *(Continued on next page)*

MARVEL SYNCLINAL FILTERS
Are Standard Equipment

Illustrated below are a few but a representative group of the various types of heavy Road Building and Construction equipment on which the manufacturers install MARVEL SYNCLINAL FILTERS as standard equipment.

"PAYLOADER" TRACTOR-SHOVEL
Model HH
The Frank G. Hough Co. Libertyville, Ill.



PIPPIN EXCAVATOR and ANGLING BULLDOZER
Pippin Construction Equip. Inc. White River Junct. Vt.

FRONT END LOADER
Ottawa Steel Products Ottawa, Kans.

25 TON DART TRUCK Model 25 SL
Dart Truck Company Kansas City, Mo.

UNIT CHALLENGER ½ YARD EXCAVATOR
Unit Crane & Shovel Corp. Milwaukee, Wis.

22 TON EUCLID TRUCK Model TD
Euclid Road Machinery Co. Cleveland, Ohio

Sump Type (Cutaway)

MARVEL SYNCLINAL FILTERS are designed for efficient filtration of hydraulic oils and to provide dependable protection to the inner mechanisms in all hydraulic and other low pressure circulating systems. They meet J.I.C. Standards.

EASY TO CLEAN

Sturdily constructed to give long and trouble-free service—yet are easily disassembled, thoroughly cleaned and reassembled in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Available for either sump or line installation in capacities from 5 to 100 G.P.M. Choice of Monel mesh sizes range from coarse 30 to fine 200.

IMMEDIATE DELIVERY!

For further information, write, wire, phone or use coupon below

Line Type (Cutaway)

MARVEL ENGINEERING COMPANY
7227 N. Hamlin Ave., Chicago 45, Ill., Phone: JUniper 8-6023

Catalogs containing complete data available on request

Catalog No. 108 for Hydraulic Oils, Coolants, Lubricants (CE-1)
Catalog No. 301 for Water
Catalog No. 200 for Fire-resistant hydraulic fluids (Aqueous Base)
Catalog No. 400 for Fire-resistant hydraulic fluids (Synthetic)

Name .....
Address .....
City ..... State .....

For more facts, use coupon.

QUALITY PARTS — LOWER COST
FOR CATERPILLAR–ALLIS-CHALMERS INTERNATIONAL

SAVE ON YOUR
TRACKS
ROLLERS
SPROCKETS
IDLERS, ETC.

- AVAILABLE FOR ALL MODELS
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Seaboard EQUIPMENT CO., INC.
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Phone: AXtel 7-4422

For more facts, use Reader-Reply Card opposite page 18 and circle No. 367

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

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New SYNTRON

SELF-CONTAINED ELECTRIC HAMMER DRILLS

No More Controller

Self-Rotating -- take all the work out of drilling in concrete

The new SYNTRON Electric Hammer Drills are now available as single, self-contained units—plug directly into power outlet—only one connection to make—no control box to drag along.

SYNTRON'S exclusive, automatic, self-rotation of drill bits takes all the work out of drilling holes in concrete—no more tiresome quarter-turning of bits by hand.

SYNTRON Electric Hammer Drills are noted for their dependability, and long trouble-free life — SYNTRON'S fewer working parts means lower maintenance.

For complete information on SYNTRON'S new self-contained Electric Hammers and Hammer Drills . . .

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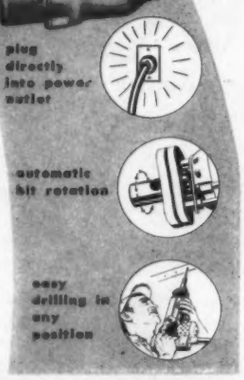


SYNTRON COMPANY
227 Lexington Ave. Homer City, Pa.

Other SYNTRON Equipment of proven dependable Quality.

BIN VIBRATORS

GASOLINE HAMMER ROCK DRILLS

ELECTRIC SAWS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 372

To obtain the literature described on this page—

———write direct to the manufacturer or circle the designated number on the Request Card at page 18.

Submersible pumps—a bulletin on the wider range of Sumo 4-inch submersible pumps. Photos and drawings show typical pump construction and installation procedure. Includes a handy Selector Guide for choosing the appropriate pump for any depth setting, water pressure, or capacity requirement. Bulletin R255.

Write to Sumo Pumps Inc., Dept. C&E, 23 Brown House Road, Stamford, Conn., or use the Request Card at page 18. Circle No. 143.

Thawing frozen material—a booklet on infrared heating equipment for thawing frozen bulk material in railroad cars. Presents a technical description of infrared heat rays, and explains how they can be harnessed to speed up the unloading of materials in freezing weather.

Write to Hewitt-Robins, Inc., Dept. C&E, 666 Glenbrook Road, Stamford, Conn., or use the Request Card at page 18. Circle No. 144.

Bituminous distributor—a bulletin describing and illustrating the Littleford Model E Spray Chief bituminous distributor. Features of construction and operation are fully discussed and illustrated; specifications on this rig designed "for the small contractor" are included. Bulletin JJ-38.

Write to Littleford Bros., Inc., Dept. C&E, 485 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 145.

Rotary broom winder—a descriptive sheet on the Ben-Ko-Matic rotary broom winder for use by county and state highway departments in preparing maintenance brooms. Details and advantages of automatic broom winding are given.

Write to the Ben-Ko-Matic Mfg. Co., Dept. C&E, 8028 N. Jersey St., Portland 3, Ore., or use the Request Card at page 18. Circle No. 146.

Spreader-hauler—a folder describing the V-Bottom Trailer combination ice-control and gravel spreader, which also doubles as a material hauler for over-the-road operation. Various applications are illustrated; specifications of five models are given.

Write to V-Bottom Trailer Division, H. V. Young Oil Co., Dept. C&E, Gladwin, Mich., or use the Request Card at page 18. Circle No. 147.

Hydraulic components—a folder describing Parker-Hannifin directional control valves, accumulators, cylinders, hose assemblies, and tube fittings for mobile equipment. Bulletin 1502.

Write to the Parker Hydraulics Division, Parker-Hannifin Corp., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 148.

Pile repair—a brochure on the Dri-Por in-the-dry pile-repair system for bridges and piers. Discusses how piles deteriorate and compares the advantages of repair in the wet and dry. On-the-job photos show the system in actual use.

Write to Dri-Por Systems, Dept. C&E, B&O Coal Pier, Baltimore 20, Md., or use the Request Card at page 18. Circle No. 149.

Rear-dump—a folder describing the Easton Model S-12 rear-dump, a 22-ton-capacity unit designed for the Euclid 78 FOT tractor. Data on design and operating characteristics. Specifications; performance chart; photographs and a dimensional line drawing.

Write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 150.

Concrete-testing machines—a catalog of Forney's laboratory, plant, and job-site testing machines with collateral equipment for testing concrete pipe and drain tile, cylinders, blocks, cubes, beams, and lintels. Illustrated with photographs. Specifications included.

Write to Forney's Inc., Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 151.

Power tools—a catalog illustrating and describing Syntron portable power tools. Complete specifications for electromagnetic hammers and drills, electric saws, gasoline-hammer paving breakers and rock drills, and concrete vibrators and floats.

Write to Syntron Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 152.

Flexible hose—a booklet illustrating and describing various applications for Flexaust hose in dust control. Installation on various types of grinding and abrasive machinery and on drilling equipment is treated. Specifications for hose and attachments are given. Bulletin No. 82.

Write to The Flexaust Co., Dept. C&E, 100 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 153.

Drafting-room equipment—a catalog of Hamilton drafting-room equipment. Covers the firm's complete line of drafting tables and files, with specifications included. Emphasizes the newer drawing and filing techniques said to be possible with the Hamilton system.

Write to the Hamilton Mfg. Co., Dept. C&E, Two Rivers, Wis., or use the Request Card at page 18. Circle No. 76.

Portable space heaters—a catalog on the complete line of Stow portable space heaters. Gives specifications on nine different models including those with built-in thermostats. Catalog 5815.

Write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 154.

Forms—a brochure on metal forms performs. Types presented include curb, curb and gutter, sidewalk, and heavy-duty units for highway and airport construction.

Write to New Cumberland Metal Products, Dept. C&E, New Cumberland, W. Va., or use the Request Card that is bound in at page 18. Circle No. 155.

PAVING CONTRACTORS . . . If You Are Paving Wide Lanes . . . Here it is

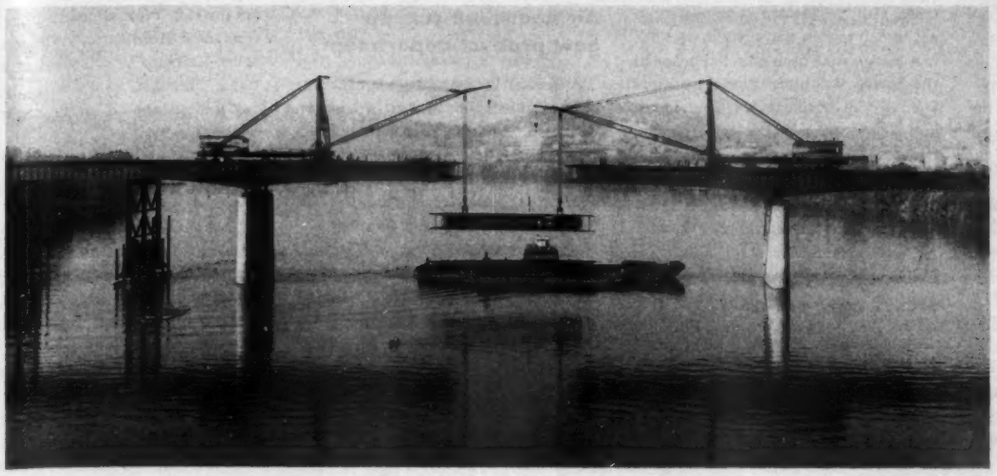
The Best Finegrading Combination

Your motor grader and our finegrading gauges give the most economical and fastest finegrading method. Used continuously by many leading contractors since 1949. Photo shows motor grader with gauges, and moldboard extension, finegrading 25 ft. wide on airport paving.

For more information about the Finegrade Gauges, write to

ROADGRADER GAUGE CORP.
D AND GREEN STREETS
P.O. BOX 1087 WILMINGTON, DEL.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 373



Two stiffleg derricks lift a 100-foot-long girder into position to close the Cedar Street Bridge near Chattanooga, Tenn. A high-strength medium-manganese steel in the continuous plate girders permitted a reduction in the over-all weight of the bridge.

THE NEW **HALE** "TORRENT"

A Lightweight, Self-Priming Portable Pump . . . built to stand up under hard usage.

Self-priming under adverse conditions is the keynote of the "Torrent."

With a 3 H.P., 4 cycle, Briggs and Stratton engine, the "Torrent" will pump over 7000 G.P.H. Its rugged and simple design handles muddy and sandy water—a large passage, open impeller helps provide "clogless" operation. Weight 54 lbs.! Write for full details! Will send you our Free Bulletin No. 363 by return mail.

Available 3 Ways

Model 20T — Gasoline Engine Driven Unit With 4 cycle, 3 H.P. engine. Equipped with exhaust valve rotator for long "trouble-free" service.

Model 15TP — Pedestal Pump. For use with your available power.

Model 15TPE—Electric Motor Driven Unit Furnished with 1½ H.P., 3450 RPM Single Phase Motor.

HALE FIRE PUMP COMPANY
Conshohocken, Pa.
For more facts, circle No. 374

TUNEUP FOR YOUR B&D TOOLS

For genuine Black & Decker repairs check Yellow Pages under "Tools-Electric" for address of nearby Black & Decker

FACTORY SERVICE BRANCH

Free tool inspection when requested • Genuine B&D parts used • Factory-trained technicians handle all work • Standard B&D Guarantee at completion of recommended repairs • Fast service at reasonable cost.

Or write for address of nearest of 48 branches to:
THE BLACK & DECKER MFG. CO., *Dept. S3601, Towson 4, Md.*

For more facts, circle No. 375

High-strength steel reduces bridge weight

A 100-foot-long girder marked the end of construction on the new Cedar Street Bridge over the Tennessee River near Chattanooga. Under the direction of crews from Bethlehem Steel Co., Bethlehem, Pa., the 12-foot-deep 73-ton girder was picked up from a barge by two 115-ton stiffleg derricks mounted on the north and south decks of the bridge.

When the steelwork is completed, the structure will require only 6,572 tons of steel. This was possible since high-strength medium-manganese steel was used in the continuous girder units, permitting a substantial reduction in the over-all weight.

The bridge is a continuous plate-girder span, 925 feet long and weighing 3,193 tons. This span is composed of three sections, the one in the center measuring 375 feet, and the two side ones, 275 feet.

Total length of the structure is 2,641 feet. It will cross the 350-foot navigation channel at a height of 72 feet. The 15 simple and continuous spans that tie together to form the bridge will carry two concrete roadways, each 26 feet wide.

Mulliken joins Sika

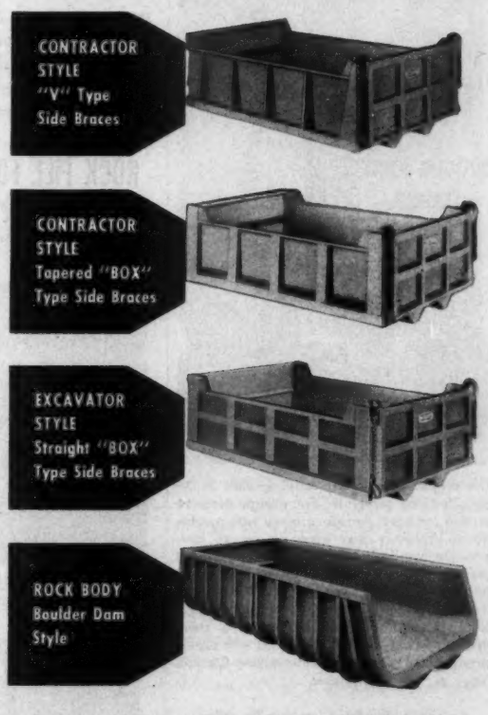
Robert B. Mulliken has joined the Pittsburgh district office of Sika Chemical Corp., Passaic, N. J. He will furnish technical information and service to architects, engineers, and contractors on Sika additives for improving the quality of structural concrete and Sika materials for waterproofing. As a sales engineer, Mulliken will cover western Pennsylvania, West Virginia, and the eastern part of Ohio.

Duff-Norton promotes

A. M. Kelly, former product manager of the Coffing Hoist Division of Duff-Norton Co., Pittsburgh, Pa., has been named district sales manager of the parent firm's San Francisco branch. He will be responsible for sales activities in the general industrial field for the Coffing Hoist and Jack divisions in California, from the Sacramento Valley south.

DAYBROOK

BUILDS DUMP BODY STYLES FOR EVERY HEAVY HAULING REQUIREMENT


CONTRACTOR STYLE "V" Type Side Braces
CONTRACTOR STYLE Tapered "BOX" Type Side Braces
EXCAVATOR STYLE Straight "BOX" Type Side Braces
ROCK BODY Boulder Dam Style

Rugged Daybrook Dump Bodies offer the contractor-excavator-builder many exclusive advantages in design in addition to all-welded *steel* or *aluminum* fabrication by body craftsmen.

In addition to a wide selection in styles and capacities in standard designs, Daybrook will build special dump bodies to customers' requirements.

For one truck or a fleet . . . when you "team-up" long-life Daybrook Dump Bodies with conventional or telescopic type hoists on hauling-dumping operations, you have "one" responsibility . . . all Daybrook.

Write for complete line broadsides on Daybrook Dump Bodies and Hoists. Request form numbers BR-B-57 and BR-H-57.

DAYBROOK HYDRAULIC DIVISION
Young Spring & Wire Corporation
BOWLING GREEN, OHIO

DAYBROOK Speedlift TRUCK EQUIPMENT

Nationwide Sales and Service

Write for more facts

Timken firm to build new plant in France

A new plant will be built on a 68-acre site in Colmar, France, by The Timken Roller Bearing Co., Canton, Ohio. This plant will be in addition to the Timken bearing factory in Paris. Construction, which will begin in March, will be done in two phases; initial facilities will house equipment for machining and heat-treating processes, and further expansion will follow. Total floor space will eventually be 168,000 square feet.

A complete line of tapered roller bearings, up to 25-inch-OD size, will be produced at the new plant, which will supply bearings to Timken's German subsidiary, as well as to the Benelux and common-market countries. Full production is expected to get under way in the autumn of 1960.

A merger has been effected between the Societe Anonyme Francaise Timken, Service Francais du Roulement, and The Timken Roller Bearing Co., Division Francaise. Societe Anonyme Francaise Timken has been a wholly owned subsidiary of the firm since 1951.

FWD asks name change; erects new building

Stockholders of the Four Wheel Drive Auto Co., Clintonville, Wis., will be asked to vote, January 13, on changing the company name to FWD Corp. The reason for the proposed change is that FWD has never been an "auto" company and has not, for some time, been exclusively "four wheel drive". No change in the product lines—heavy-duty trucks and other specialized vehicles—is contemplated.

Quaker Rubber promotes

S. William Riley has been promoted to chief engineer of the Quaker Rubber Division, H. K. Porter Co., Inc., Philadelphia, Pa. Formerly chief project engineer for the firm, Riley will now be responsible for all engineering at the Philadelphia plant.

Air Reduction sets up new product department

A Special Products Department has been established by the Air Reduction Sales Co., Division of Air Reduction Co., Inc., New York City. Charles I. MacGuffie has been appointed manager of the department and J. H. Berryman, general sales manager.

The new department will bridge the gap between pure research and the industrial application of new products and processes developed in the firm's laboratories.

LeT-WesCo promotes seven

Seven men in the Merchandising Division, LeTourneau-Westinghouse Co., Peoria, Ill., have been promoted. Six of the promotions are a result of establishing a new motor grader sales department. The seventh promotion, that of Floyd A. Rager, was brought about by the merging of the firm's parts and service departments. Rager is now general parts-service manager.

Lloyd A. Rager, former advertising manager, is now manager of the motor grader sales department. Assistant to the manager is E. L. Cline, who was previously central area sales manager. Succeeding Cline is Robert J. Fahey.

Charles L. Petersen replaces Fahey as district representative for Iowa, Nebraska, Kansas, and western Missouri. Kenneth W. Chriswell is advertising manager, and David R. Harvey is assistant advertising manager.

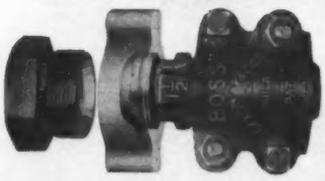
Friction piles discussed in new HRB bulletin

"A Study of the Comparative Behavior of Friction Piles", Special Report 36, is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. Test data on piles in soft and medium clays, stiff clays, sand, and stratified soils is thoroughly detailed in the report.

Three appendixes contain a list of symbols, tables, and figures. The $2.40 bulletin may be purchased from the HRB.

Safest Connections for Pile Driver Hose
AND OTHER STEAM, AIR, WATER AND HYDRAULIC APPLICATIONS

"GJ-BOSS"
GROUND-JOINT FEMALE COUPLING STYLE X-34



The original *washerless* coupling that is unequalled for *safety* in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal...no lost or worn-out washers to replace. All parts malleable iron or steel, thoroughly rustproofed. Furnished with super-strong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

COMPANION MALE COUPLING "BOSS", STYLE MX-16

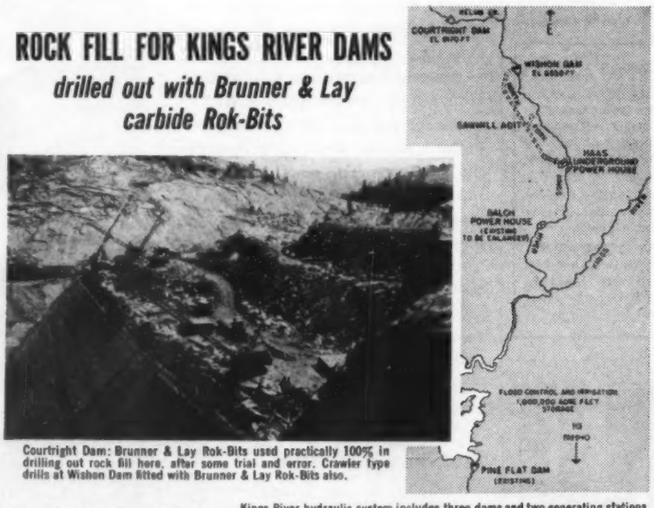
Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose . . . oversize hose not required. Coupling consists of I.P.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes ¼" to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO. LTD., TORONTO, Associate Companies

For more facts, circle No. 377

ROCK FILL FOR KINGS RIVER DAMS
drilled out with Brunner & Lay carbide Rok-Bits



Courtright Dam: Brunner & Lay Rok-Bits used practically 100% in drilling out rock fill here, after some trial and error. Crawler type drills at Wishon Dam fitted with Brunner & Lay Rok-Bits also.

Kings River hydraulic system includes three dams and two generating stations. Connecting tunnels drilled out with Brunner & Lay 1⅝" Rok-Bits.

Kings River contractors insist that blast hole drilling be continuously efficient—20 hours a day—and economical. Their use of Brunner & Lay carbide Rok-Bits is a good reason for you to check with Brunner & Lay on your drill bit and drill steel needs. Call your dealer, or our nearest plant. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 76 progressive years. Sales & Shop Service: Philadelphia, Asheville, Birmingham, Dallas, Albuquerque, Denver, Los Angeles, Sacramento, Portland, Seattle, Lachine, P.Q.

Request new bulletin DA 1-58 on your company letterhead, stating your position.

As the solid blue granite fractures easily on the "shot", small diameter hole centers were set at 7 x 8', bottoming at 2¼". Brunner & Lay 600 "X" Rok-Bits used for this tough work.

Sectional rods in ⅞" and 1" hex alloy and 1½, 1¾ and 2" round carbon steel. Also standard alloy and carbon drill steel. All standard threads. Serviced at our many plants.

Brunner & Lay Rok-Bits in cross, chisel, "X", cutaway, taper-socket types. In standard wagon and hand held drill threads—also 1,000; 700; 600; 400; 200; J5.23; J5.5; J7.5 threads. Sizes up to 7".

Contracting agent—Pacific Gas & Electric Co.; Contractors—Morrison—Walsh—Perini; Project manager—Bert Perkins.

Brunner & Lay Products
CARBIDE ROK-BITS • INTRASET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 378

TIME SAVED TWICE! with SYLGAB

Continuous BAR BOLSTER SUPPORTS

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.

A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

•

Member Concrete Reinforcing Steel Institute

•

Manufacturers of Steel and Wire Accessories for Concrete and Fireproof Construction.

SYLGAB
STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.
BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For more facts, circle No. 379

Toll revenue on the Kansas Turnpike was up 21.14 per cent, and traffic volume was up 19.72 per cent in October, 1958, as compared to October, 1957, figures. In mid-November, toll revenue was up more than 10 per cent over that of November, 1957, indicating that the upward surge in turnpike use is continuing.

Announcing the New Smith 125

Operate two 85-lb. paving breakers at the same time with this brand new Smith Compressor!

This newest member of the Smith family of compressors is built with a heavy-duty industrial type 6-cylinder engine. Three cylinders are for power; three for compression. The Smith 125 is a trouble-free compressor with a minimum of gaskets and gadgets.

The Smith "Governair" regulates air supply to air demand for economy and long life. You have lower first cost, lower operating cost and lower maintenance cost because of sound engineering and simple, compact design.

Write today for complete details on the new Model 125-P and also other Smith Compressors in portable and stationary models from 45 to 220 cfm.

GORDON SMITH & COMPANY, INC.
483 College Street
Bowling Green, Kentucky

For more facts, use Reader-Reply Card opposite page 18 and circle No. 380

B-E engineer appointed to SAE technical board

George W. Mork, chief engineer of commercial cranes and excavators of Bucyrus-Erie Co., South Milwaukee, Wis., has been appointed to the technical board of the Society of Automotive Engineers, Inc. Mork's 3-year term began January 1.

The 24-man technical board administers SAE's cooperative engineering program, which develops engineering standards and specifications for the earthmoving, tractor, truck-bus, and automobile industries.

Koehring establishes finance corporation

Koehring Finance Corp. has been formed as a wholly owned subsidiary of Koehring Co., Milwaukee, Wis., manufacturer of construction machinery. The major objective of the new firm is to be able to offer more attractive terms to the parent company's distributors and customers.

Officers of the new subsidiary are Julien R. Steelman, president; Orville R. Mertz, vice president of finance; Vincent R. Peterson, secretary; and Peter P. Graser, treasurer. All of these men are officers of the parent firm and directors of the new subsidiary. E. B. Hill, vice president of marketing and a director of Koehring Co., is also a director of Koehring Finance.

Bucyrus-Erie of Canada opens new plant

Bucyrus-Erie Co. of Canada, Ltd., has opened a new plant at Guelph, Ont. The firm, which is a subsidiary of Bucyrus-Erie Co., South Milwaukee, Wis., staged a plant tour and an equipment demonstration as part of the opening. Five major models of cranes and excavators, three of which are now being built at the Guelph plant, formed the nucleus of the show on the test grounds. The Guelph plant is producing the Models 11-B, 22-B, and 30-B.

American Cyanamid branch to move to new building

The Portland, Ore., branch office of American Cyanamid Co., New York City, will move this spring to a new building being constructed in the Davis Industrial Park on N. W. Yeon Ave., Portland. Located on a 2-acre site, the one-story facility will offer 26,700 square feet of space for offices and a warehouse. Branch sales and distributing activities of Cyanamid's five divisions and one subsidiary will be consolidated in the newly constructed building.

TRUCO® DOES IT AGAIN!!!

KING SIZE HOLES in 30" reinforced concrete footing drilled with TRUCO MACHINE and TRUCO DIAMOND BITS

JOB: Cut 87 holes 3′ diameter around three 30′ diameter circles through 30″ reinforced concrete footing of a 50′ retaining wall; holes to be cut without impact or vibration which might shatter concrete, break bond of concrete to 1¼″ steel rods, or cause spalling which would expose reinforcement. Purpose of the holes was to permit pouring of three 24′ diameter by 46′ friction piles to support a reinforced concrete plate upon which would be erected a 70′ concrete and ceramic pylon weighing 200 tons.

PROJECT: Fort Moore Pioneer Memorial, Los Angeles.

CONTRACTOR: John L. Meek Construction Co. Inc., L. A.

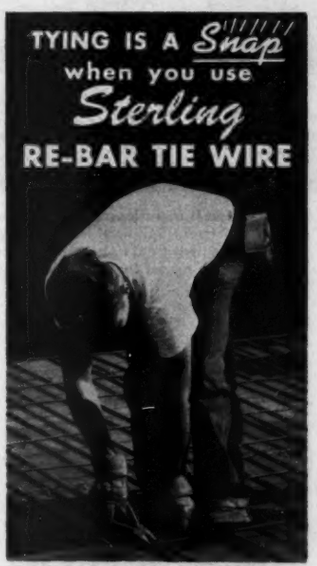
TOOLS: Truco Model B Portable Diamond Drilling Machine, 750 rpm motor, 3″ O.D. Truco Diamond Drill Bits.

OPERATION: Truco machine was set up and anchored to bolts in footing so it could be rotated in a circle. Anchoring provided leverage for fast cutting. Drilling 29 overlapping holes around a circle provided a 30″ diameter hole with a 27″ core weighing over a ton. Bits pierced concrete and steel without difficulty. Each 30″ x 30″ hole was completed in 29 hours. Nine Truco bits were used.

Write or phone for nearest distributor's name.

TRUCO MASONRY DRILLING DIVISION
WHEEL TRUEING TOOL COMPANY
51-3200 W. Davison Ave. • Detroit 38, Michigan

For more facts, use Reader-Reply Card opposite page 18 and circle No. 381



NEW SPEED, SAFETY and EFFICIENCY

Sterling Re-Bar Tie Wire for the handy reel dispenser worn on the belt, saves you time and money! One man can make up to 25% more ties per hour than he can with clumsy "shoulder coil" methods. Sterling Wire is tougher, stronger . . . easily "worked" to step up efficiency and produce firm, snug ties. Take advantage of the speed, safety, and money-saving benefits offered by this better way of making better ties.

See Your Distributor

Sterling Re-Bar Tie Wire is available 20 coils to the box. No. 14 or No. 16 wire.

NORTHWESTERN STEEL AND WIRE COMPANY
SINCE 1879
STERLING, ILLINOIS

For more facts, circle No. 382

Steel domes aid forming of waffle-type slabs for highway headquarters

When the Steeldomes are not in use, their compactness and lightness make them simple to store. One man handles the dome easily.

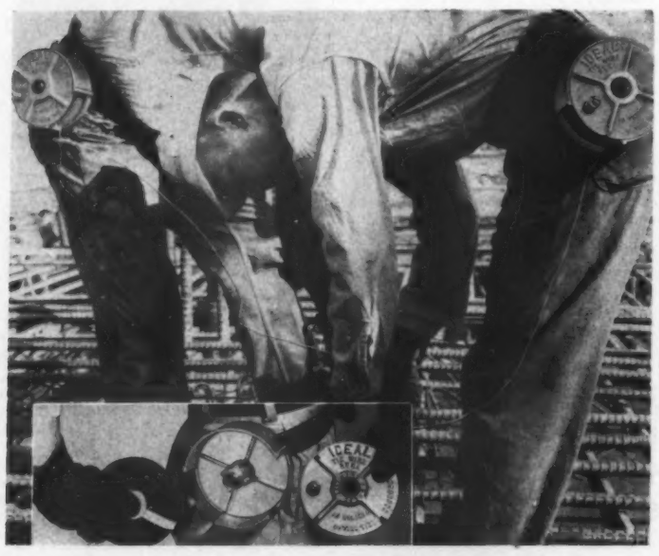
Construction is in various stages on one of the upper floors of the Minnesota highway department building. In the foreground, wet canvas is used to cure the concrete. Placement and finishing are done at center. In the background, the steel domes are being set for the waffle-type slab.

Compressed air forced through hole in center of pan makes it possible for two men to strip concrete fast

The Federal Highway Act is not only changing the scope of Minnesota's road program, but it has also changed the shape of the highway department's new office building in St. Paul. Even before the contract for the 7-story building was completed, it was decided to top the structure with an additional two stories. The extra space was necessary to accommodate the demands of the new highway program. The $9 million building gives the department modern, unified headquarters. Until now, the various branches were scattered through St. Paul.

From the bottom of the subbasement to the top of the ninth floor, the reinforced-concrete construction presented its own special challenges, and the joint venture of Lovering Construction Co. and J. S. Sweitzer & Son, Inc., both of St. Paul, was ready to meet them.

To form the waffle floor slabs, the contractor tried out a new type of steel pan. The unique advantage of the Ceco-Meyer Steeldome was the



Ideal Tie Wire Reels save time . . . wire . . . money!

Makes Wire Tying Faster, Safer! Contractors everywhere prefer Ideal Tie Wire Reels to any other wire tying method they've ever used . . . **and so do the workers who use them!** Ideal Reels permit 6 to 8 more ties per man per minute, often much more . . . saves up to 33% in wire, ends wire waste . . . protects users from injury, reduces labor fatigue! Wire capacity . . . 3½ to 4 pounds . . . twice as much as horse and buggy methods you have used. Handles 14 through 20 gauge wire. Call your local supplier and get a free demonstration of the biggest advance in wire tying known today . . . or write us for full details.

More Economy . . . Plus More Production, Too!

IDEAL TIE WIRE REELS

Ideal Reel Company
1424 Madison Street
Paducah, Kentucky

Please send me facts on Ideal Tie Wire Reels, and address of nearest dealer.

Name_____

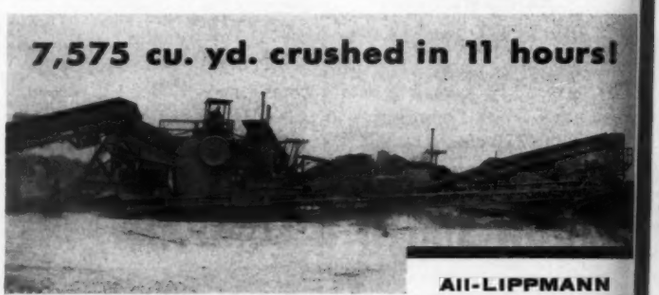
Company_____

Address_____

City_____ Zone____ State_____

IDEAL REEL COMPANY, PADUCAH, KENTUCKY

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 383



LIPPMANN Portable Plant sets record-smashing pace

April 17, 1958 is the day W. O. Pelphrey's work crews will always remember. On that day this Ft. Worth, Texas contractor's Lippmann Portable Plant crushed 7,575 yards of material, and nearly all of it was also hauled 15 miles and placed as flexible base for Interstate Highway 35, north of Temple, Texas.

The Lippmann plant produced a total of 385,000 cu. yds. of 215A and special material for this project with an average daily output of more than 5,000 cu. yds. As a result of this performance Mr. Pelphrey said, *"I'm well pleased with my Lippmann Plant".*

All-LIPPMANN plant includes:

PRIMARY unit
- 42" x 35' Portable apron feeder
- 30" x 42" Grizzly King jaw crusher
- 4' x 8' Heavy-duty double deck "Screen-all" scalping screen
- 36" x 35' product conveyor
- 24" x 10' reject conveyor

SECONDARY unit
- 36" x 50' Feed conveyor
- 60" x 30" Roll crusher*
- 5' x 14' triple deck screen
- 36" x 30'9" return conveyor
- 24" x 10' Reject conveyors (2)

** the largest ever made available for portable use*

You'll like LIPPMANN too!

The same complete Lippmann engineered planning and manufacturing that is doing a real job for W. O. Pelphrey is also available to keep *you* competitive. Whether it's complete crushing or washing plants, portable or stationary — or individual components — it will pay to contact your local Lippmann Distributor, or write for literature and other facts to Lippmann Engineering Works, Inc., 4637 W. Mitchell St., Milwaukee 14, Wisconsin.

1610-20-59-1

LEW LIPPMANN SINCE 1923

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 384

Crews install the Walkerduct system that will carry power and telephone lines. Notes holes in the center of the Ceco-Meyer Steeldomes; these enable the forms to be stripped with compressed air.

convenience of stripping it from the concrete. The dome was broken loose from the slab by compressed air forced through a small hole in the center of the dome.

The new building, which occupies an entire city block, is located on the Mall practically in the shadow of the State Capitol Building. Designed by Ellerbe & Co., Architects and Engineers, St. Paul, the structure has 420,000 square feet of floor space. It contains nine stories set above a basement and subbasement. Located on a sidehill site, the building can be entered from either the first or the ground floor.

Designed to meet the special needs of highway personnel, the headquarters include a 2-story wing housing a material-testing laboratory. In the basement of the wing is a garage for highway vehicles. Although most of the space in the main building is devoted to offices, about half of the main basement area is occupied by a modern photographic laboratory. A

(*Continued on next page*)

STERLING EARTH BORING MACHINES

2 IN 1 DIGGER DRIVER

WYOMING VALLEY EQUIPMENT DIVISION

KINGSTON, PENNSYLVANIA
Telephone BUtler 7-3158

GUARD RAIL CONTRACTORS & HIGHWAY DEPARTMENTS!

Steel Post Driver For Any Model Sterling Digger. YOU can Dig the Hole, Set the Post or Drive the Steel Post with one unit at one cost and one maintenance! Dig or Drive from either side within 180° radius.

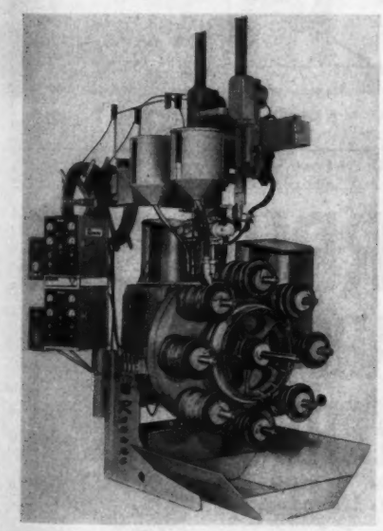
Driving Plate can be removed and auger installed on Digging Bar in five to ten minutes.

A Proven Machine At Less Than Half The Cost of Similar Equipment.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 386

REVOLUTIONARY *Rexarc*

Enables High Speed Production in Tractor Roller Rebuilding



Here is the new *Rexarc* MS-8 Automatic Twin Head Roller and Idler Welder and Positioner that revolutionizes roller rebuilding. One operator can do as much high quality work as three to four men with other types of equipment.

Mounts 8 rollers at a time. Hydraulic indexing enables virtually a continuous automatic welding operation. Twin heads build up both sides of roller simultaneously.

•

Factory engineer trains your operator, assuring excellent results from the very beginning of welding operations, at no additional cost.

•

Write, wire or phone today for complete information about this revolutionary profit-maker.

Manufactured By

THE SIGHT FEED GENERATOR COMPANY

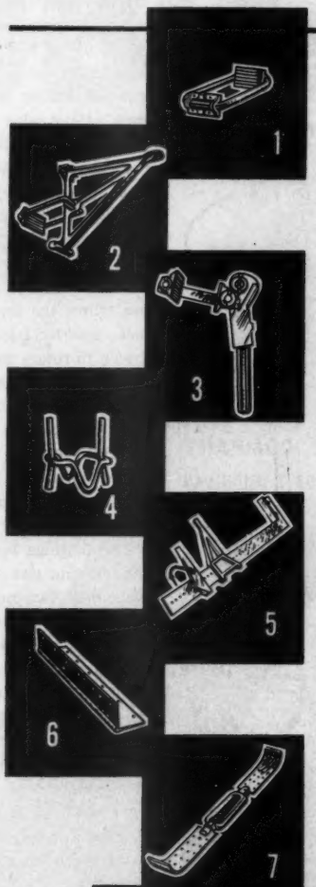
SALES OFFICES AND FACTORY, WEST ALEXANDRIA, OHIO, U.S.A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 385

Profit Formula for Concrete Construction:

S - E - A - S

"S" for Safety — "E" for Economy — "A" for Adaptability — "S" for Speed



***Ellis* METHODS**

OF SHORING OFFER YOU

S - E - A - S

. . . for Lower Cost and Better SUSPENDED REINFORCED CONCRETE WORK!

The Simple Ellis Metal Products Illustrated Here Work With Ellis Methods to Give You Outstanding Results!

1. ELLIS CLAMP FOR SHORES
2. ELLIS HEAD CLAMP
3. ELLIS JACK
4. ELLIS SLIP-IN SHOREHOLDER
5. ELLIS BEAM-&-COLUMN CLAMP
6. ELLIS TIMBER SPLICER
7. ELLIS WALL BRACE

Write for More Details

ELLIS MFG. CO. INCORPORATED

211 N. W. 4TH ST. • OKLAHOMA CITY, OKLAHOMA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 387

Columns between the sixth and seventh floors are formed with sides of 1 × 8 lumber. Steel collar clamps hold the forms together; diagonal braces hold the column plumb.

Concrete work moves up to the fourth floor of the building. Concrete and other materials were lifted to all but the top two floors of the 9-story building by the Manitowoc Speedcrane.

ceiling, workmen drilled small holes in the pans. The center hole, later used to strip the pan, was covered with a paper seal. The pans were rented, installed, and stripped by Ceco Steel Products Corp., Chicago.

After the reinforcing steel was set in the beam and joist sections, the ductwork containing the electric and telephone wires was set on chairs on top of the pans. The flexible Walkerduct system contained risers every 2 feet along the twin ducts. Some 8 miles of Walkerduct was used in the building.

Floor poured in sections

The floor was poured in sections normally containing about 170 yards of concrete. Concrete for the lower floors was bucketed from transit-mix

SNOW REMOVAL is
faster, easier, more economical
WITH
MONARCH Power Hydraulic CONTROLS
that LIFT and LOWER the snow plow...
...Automatically!
DYNA-MIGHT
BATTERY OPERATED
MODEL HEP
HY-LO-JACK
HY-LO-JEEP
FAN-BELT DRIVEN
You operate the snow plow right from the truck or jeep cab with Monarch Controls. Instant, automatic lifting or lowering that saves time, does the job more efficiently. See your dealer or write for illustrated folder.
MONARCH
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(Continued from preceding page)

kitchen and cafeteria, capable of serving all employees, occupies much of the ground floor. An automatic vertical conveyor carries and discharges packages to any floor. The new offices are air-conditioned.

Excavation is tough

Excavation of the 90,000 cubic yards of sandy material was complicated by a heavy flow of ground water. The vein of water, however, was cut off by about 80 wellpoints sunk at the edge of the excavation. The water is being permanently routed through tile drains to a sump in the subbasement, then pumped to the city storm sewer.

The nature of the sidehill cut caused a wide variation in the depth of the excavation. On one high corner, where the depth ran to about 45 feet, interlocking sheet piles were driven to retain the earth.

About 20,000 cubic yards of the excavation was carried by two LeTourneau-Westinghouse scrapers to a stockpile on the site. This material was later used for backfill. A dragline, loading into dump trucks, handled the rest of the excavation.

The footings for the main part of the building rest on 1,006 poured-in-place piles varying in length from 25 to 40 feet. Some 24,000 feet of Armco Hel-Cor pile shell was used for this operation.

The square columns went up first in the 98×244=foot tower section. The interior columns were of standard reinforced-concrete design. The alternate exterior columns, however, were built of H-beams enclosed in concrete to make mullion covers slender and provide more window area.

Domes form floor slab

Adjustable bar joists, held up by 4×4 shores with Ellis clamps, supported the plywood decking. With the plywood surface to work on, it was a simple matter to set down the 30×30-inch Steeldomes. The 10-inch-deep pans had a 3-inch flange which yielded a 6-inch-wide joist section. With the exception of a 9-foot-square block around each column and a strip forming a solid beam between the columns, the pans completely covered the plywood decking.

To set in hangers for the suspended

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trucks to hand buggies by a Manitowoc Speedcrane. A 1¼-yard bucket in an Archer tower carried the concrete to the top two floors.

After Homelite vibrators consolidated the 3,000-pound mix, it was screeded and floated by hand. Whiteman and Master troweling machines put the finishing touches to the floors, and paper and canvas mats were wet down to cure the concrete.

Compressed air strips pans

Considerable wear and tear on both the concrete and the pans was avoided by the unique air-stripping system. Working from a raised platform, one man handled the air hose, while another caught the pan. The air hose contained a pipelike extension, which was pressed against the paper-covered hole. When pressure was applied to the line, the air was forced through the hole, loosening the pan from the concrete.

Granite facing

The Mellow-Groove granite slabs that face the 6-foot-high spandrel beams add to the beauty of the building, but it was no small job to set them in place. The 60,000 square feet of granite for the facing was trucked into the job from the Cold Spring Granite Co., Cold Spring, Minn.

Tubular scaffolding on wheels is used by a crew setting column steel in position. Wire for tying steel is carried in an Ideal Reel worn by one of the men on the job.

To avoid chipping or breaking the stone, crews had to take considerable care in handling the 6×6-foot slabs. An Econmobile fork-lift, using a belt sling, generally unloaded the 1,700-pound slabs individually to a stockpile beside the building. The Manitowoc Speedcrane lifted the slabs when they were needed on upper floors. On each floor the granite slabs were handled by a Hi Duty 250 forklift. A cable on a hand winch was used to lower the 4-inch-thick slabs into position.

Where the granite faced the spandrel beam, the slab was supported at its base by an angle iron bolted into the concrete. Steel clamps held the top and the sides of the slab against the concrete beam. The clamps gripped into channels in the edges of the slab and into slots cast in the concrete. Joints connecting the granite slabs were made with mortar.

The window area between the granite spandrels was framed with gray-colored aluminum mullions and horizontal panels.

Box-shaped tunnels provide underground walkways from the highway building to the nearby State Office Building and Veterans Service Building. Steam is piped into the basement from the Capitol power house.

Strange as it may seem, the steam will cool the highway building in the summer. The steam powers an absorption refrigeration machine with a capacity of 576 tons. Furnished by Carrier Corp., Syracuse, N. Y., the machine will cool the first seven floors of the building. The top two floors will be air-conditioned by an additional unit stationed in a machinery penthouse.

The superintendent for the joint venture was R. S. "Dick" Rasmussen. Ken Iverson was the field engineer. The architect's representative was Floyd H. Moe. The representative for the highway department was Elmer Erkkila. THE END

An Econmobile fork-lift uses a belt sling to lift the Mellow-Groove granite slabs from the International truck to a stockpile. Blocks face the spandrel wall in the background.

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◄ Concrete lining of the 1,400-foot-long Mule Pass tunnel near Bisbee, Ariz., is a fast job with Hackley concrete-placement guns. A charge of 3 cubic yards of concrete is dumped to one of the rigs by a Koehring 34-E Twinbatch paver while another of the units waits to be filled.

The second of two 1½-yard batches goes into a Hackley. Each of the rigs on the job rides a separate pair of rails, one on each side and one in the center. Air tuggers and cables pull the machines into position.

Air guns do swift job placing concrete for tunnel lining

The forms travel on flanged wheels that roll on rails along the outer edge of the tunnel. Pours were made only two days a week because of the lengthy curing period required by specifications. Forms were used separately at first and later in tandem.

Guns and gunplay are old stuff around Bisbee, Ariz. This city, the county seat of Cochise County, is a landmark of the old West and, more recently, the locale of many TV westerns. But the shooting irons used by crews of Peter Kiewit Sons' Co. on the Mule Pass highway tunnel were something new to Bisbee. These concrete-placement guns shot some 15,000 cubic yards of concrete into forms for the tunnel lining, and crews placed up to 600 cubic yards in a single shift.

The spotlight was almost stolen from the lining operation by the drilling work. A new record for rock removed per driller per day was set on the job. This record, 3,107 feet, exceeds the previous record of 2,562 feet held by Australians in the boring of the Ecumbene Tunnel.

The 1,400-foot-long tunnel, together with open-cut sections at each end, makes up a total of 1.2 miles of new alignment for U. S. 80. The job lowered the road over Mule Pass Summit by more than 200 feet and eliminated sharp curves and steep grades to provide a safer entrance to the city. Kiewit, working under a $1,983,659 contract with the Arizona State Highway Department, handled the project on a year-round basis, for the mild climate in this area of southern Arizona permitted work to be done practically every day. Supervision of the construction was shared by Kiewit's Denver and Los Angeles divisions. The Denver office handled the outside excavation and highway paving, while the Los Angeles branch took over the drilling and lining of the tunnel.

The finished tunnel section is 42 feet wide and 23 feet high. It carries two westbound (upgrade) lanes and one eastbound (downgrade) lane, all 12 feet wide. A 2-foot curb and 1-foot gutter on each side bring the total width to 42 feet. The tunnel was drilled roughly 46.5 feet wide and 26 feet high.

The inverted-U-shaped lining rests on 4-foot-wide and 2.5-foot-deep footings on each side. The lining is approximately 36 inches thick and encases the 10-inch 42-pound H-beam arch roof supports. The floor, a conventional concrete-highway pavement, was placed by the crew that paved the tunnel approaches.

Drilling record

Working two 8-hour shifts per day, the crews drove 120 feet in six days, removing 40 cubic yards of rock per linear foot of tunnel for a total of 21,750 cubic feet per day.

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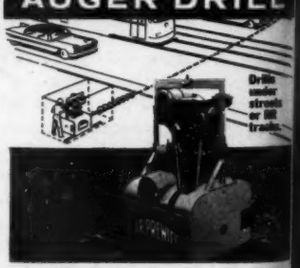

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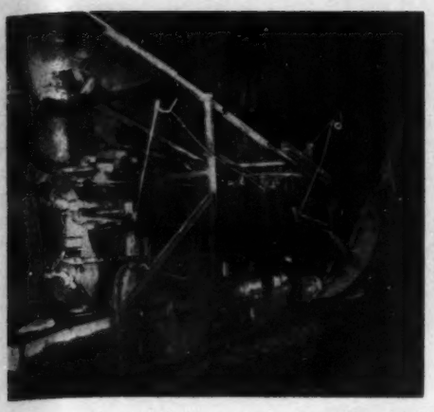
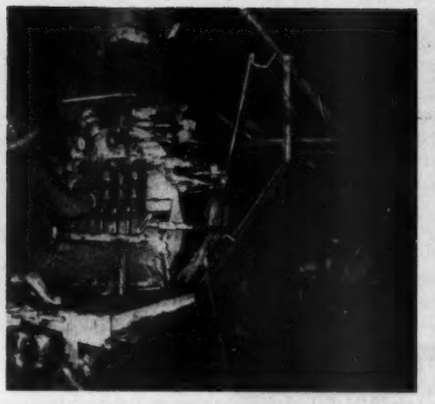


When a Hackley is full, the operator closes the airtight cover and the counterbalanced hopper rises out of the way. A series of valves is used to introduce air into the gun at several points to blow the charge out.



As high-pressure air goes into the machine, concrete is blown out of the discharge pipe and into the forms. Hackleys at each side start placement; the third goes into action in the center.

The form leaves plenty of room for equipment to pass under during the placing operation. Note the concrete pipes entering the form at the crown and at left. Odd lengths of board around the front make up the bulkhead.

Crews place 600 cubic yards of concrete in single shift; new drilling record of 3,107 feet is set by crews on job

The crews used a 3-level truck-mounted jumbo carrying seven hydraulic jibs fitted with 3 and 3½-inch drills. This gave them access to half of the face at a setting. When work on one half was done, the jumbo was moved over to the other half to give a full-face excavation. Rounds were shot 3 to 14 feet in depth, the shorter rounds being in less stable material. Millisecond delays were used.

As a loader filled 22-yard end-dumps with muck, the crews set the 10-inch BP steel-arch ribs. The ribs were set at 3-foot centers, and wood blocking and lagging were placed behind them.

High-pressure air for the drilling was supplied by a 900-cfm and two 600-cfm compressors. A 55,000-cfm electric-powered blower furnished the ventilating air. The entire tunnel was mined from the downhill portal.

Prior to the award of the tunnel contract, an exploratory pilot tunnel had been drilled through the mountain so that the nature of the rock, the amount of ground water, and other data could be determined. This 6 by 7-foot tunnel fell right at the crown of the big tunnel, and the drillers knew precisely what type of material they would encounter.

Lining form

After the tunnel excavation was completed, the 2.5×4-foot footings for the lining were placed along both sides of the tunnel for its full length.

A 6-inch perforated pipe drain was placed on the footing behind the lining on the south side to handle water seepage. The drain was surrounded with crushed rock. On the north side, short sections of 6-inch

(Continued on next page)

One of the two 32-foot-long form sections is used at the portal while the second works inside. Later, they were used in tandem. Jacks raise and lower the roof section: steamboat ratchets swing sides in and out.

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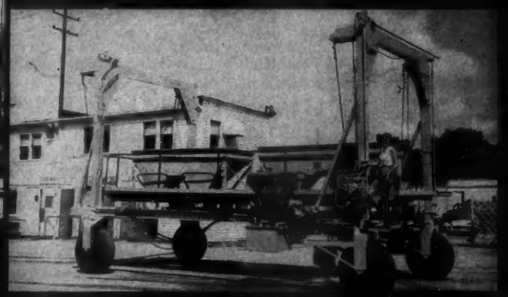

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Tunnel concrete is batched by a Noble plant set up in a roadway cut that was made before drilling started. A Michigan 125A tractor loader feeds aggregates from stockpiles on the bank to the hopper of a Cedarapids portable belt conveyor that leads to the plant.

(*Continued from preceding page*)

perforated pipe were placed behind the wall at points of maximum seepage. These pipes were connected to 3-inch pipe weeps that extended through the wall and discharged into the gutter.

The two sections of tunnel form used for the lining were then assembled and rolled in to start the lining operation. The forms were supplied by National Construction Co., Inc., Omaha, Nebr. The 32-foot-long sections were first used separately, one forming the portal as the other moved up the tunnel. Later, they were assembled in tandem and used together to speed the lining operation.

The forms traveled on flanged wheels that rolled on rails near the outer edge of the tunnel. The roof section of the form was raised and lowered with jacks, while the segments forming the sides were swung in and out with steamboat ratchets. The wide clear opening under the middle of the form left ample headroom for trucks and other vehicles.

To pump the concrete up into the form, Kiewit used three big air-placer guns. Basically, these consist of a big steel cylinder that will take a charge of about 3 cubic yards of concrete. The charge was placed directly from the bucket of a paver.

After the paver had dumped two 1½-yard batches into an air placer, the airtight cover of the gun was closed by the operator. Air was then applied. A series of valves and pipe arrangements permitted the air to be introduced at several points inside the gun so that the complete charge could be blown out.

Concrete pipes leading from the air placers rose to the roof of the tunnel and entered the form at three points, one near each side and one in the center. Only the two outer guns were used to start the placement. Then, as the concrete built up on the sides and began filling the top of the form, the third machine was put into use in the center.

Each of the concrete guns was mounted on a pair of rails, and each was propelled up the grade by an air tugger and a cable anchored to the tunnel rings ahead. The pavers straddled the rails of the center machine.

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To consolidate the concrete in the forms, the contractor used four external vibrators on each side of the form. These were attached with air clamps. Inside the form, workmen on each side used two vibrators powered by generators.

This was a very satisfactory concrete-placement operation, the crews placing up to 600 cubic yards in a single shift. Because of a long curing period required by the specifications, it was possible to pour only two days a week.

The coarse aggregates for the concrete were produced by the general contractor in a pit about seven miles from the job. In the pit, a shovel and end-dumps fed a 25×42 primary crusher and a jaw and roll secondary unit. Trucks hauled to stockpiles at the job site; a local supplier delivered sand to the batch-plant site.

In setting up the batch plant, Kiewit took advantage of the roadway cut that had been made in advance of the tunnel drilling. The aggregate stockpiles were built on the bank beside the cut, and the batch plant was set up in the cut. This made it possible to use an almost level conveyor to feed the plant bins.

A tractor shovel carried the sand and two sizes of coarse aggregate from the stockpiles to the receiving hopper of the portable conveyor that fed the batch plant. The plant dispensed the batches to three batch trucks carrying three 1½-yard batches per load. The batch plant was set up near the upper or western portal of the tunnel so that the batch trucks could drive into the tunnel and turn around to dump into the paver at the point of the pour.

An additive was added to the mix to obtain a high-early strength and to improve water dispersal. The usual batch contained 6⅔ sacks of cement per yard. Maximum aggregate was 1½ inches.

After the lining was placed, a sand-cement grout was pumped in behind to seal off any voids. Grout holes were drilled in the ceiling of the tunnel, and the grout was pumped in with a grout pump.

Outside excavation

In addition to the tunnel, the project included about a half mile of new roadway at each end of the tunnel. On the west end, this was a heavy rock cut, reaching a maximum depth of 110 feet. The rock was drilled by

(*Continued on next page*)

Equipment and materials used

Three-level truck-mounted jumbo
Seven Joy hydraulic jibs
Joy 3 and 3½-inch drills
Eimco 105 overshot loader
Euclid 22-ton end-dumps
An Ingersoll-Rand 900-cfm, two 600-cfm, and a 500-cfm compressor
Gardner-Denver 500-cfm compressor
Joy 600-cfm Airvane compressor
Joy 55,000-cfm electric-powered blower
Three Hackley air placers
Koehring 34-E Twinbatch paver
Chicago Pneumatic air tuggers
Four external Viber vibrators
Viber air clamps
Maginniss Hi-lectric vibrators
Maginniss generators
Northwest 80D shovel
Cedarapids 25 × 42 primary crusher
Noble batch plant
Michigan 125A tractor shovel
Cedarapids portable conveyor
Three Ford 3-batch trucks
Master Builders Pozzolith 3L
Gardner-Denver grout pump
Gardner-Denver Air Trac 4½-inch drills

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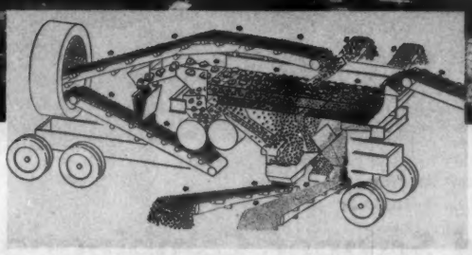

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Cedar Rapids, Iowa, U. S. A.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 401

NEW! NEW! NEW!

ATTENTION: *Contractors, City Engineers, Councilmen*

IS THAT NEW BOND ISSUE NECESSARY?

- Would you like to make the taxpayers' concrete pipe dollar go 20 to 30% further?
- Contractors! Are you having joint problems?
- Extrude perfectly bedded No-Joint Concrete Pipe and show bigger profits.
- Save the taxpayers' dollars with portable No-Joint equipment in sizes from 24" to 72" pipe.
- No-Joint Concrete Pipe with over 800,000 feet in place has never had a load failure in seven years of service, in all kinds of soil conditions.
- For storm sewers, down city streets, under highways, for sanitary sewers and irrigation projects.
- A completely new conception of concrete pipe that you must see to appreciate! !

OUR PIPE WILL DO THE JOB—WILL YOU? ? ?

SAVE! SAVE!! SAVE!!!

NO-JOINT Machine making 48" storm drain

Write today for full details to:

NO-JOINT CONCRETE PIPE CO., P.O. Box 609, YUBA CITY CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 402

A battery of compressors outside the east portal supplies air for the three Hackleys and other rigs in the tunnel. In the lineup are an Ingersoll-Rand 900-cfm Gyro-Flo, two I-R 600 Gyro-Flo compressors, a Gardner-Denver 500, a Joy 600 Airvane, and an I-R 500 on the truck at the end of the line.

(Continued from preceding page)

a pair of 4½-inch drills operating off the same compressors used for the tunnel work. The material was loaded by the shovel and hauled with end-dumps.

The approach sections were paved with asphaltic concrete on a stabilized rock base. The concrete floor of the tunnel was laid by conventional paving equipment.

The tunnel drilling and lining and the outside work were handled by separate divisions of the Kiewit organization and supervised by two staffs. In charge of the tunneling were Peter "Pete" Janopaul, Jr., superintendent, and Ray Poulsen, project engineer. The office manager was Andy Anderson. For the tunnel excavation, Marvin Bishop and Chuck Winsell were the walkers for the two shifts. Wilbur "Red" Seeber was concrete superintendent on the lining operation. All of the outside excavation and paving was done under the supervision of Harlan Gottbrecht.

For the Arizona State Highway Department, G. J. Federico served as senior resident engineer. The project fell under the jurisdiction of the Safford District, of which Oscar Lyon, Jr., is district engineer. William R. Willey is state highway engineer and C. B. Browning assistant state highway engineer. THE END

Geared by FULLER . . .

. . . M-R-S 38 Cubic Yard Scraper Combination equipped with R-1550 ROADRANGER®

M-R-S Manufacturing Company, Flora, Mississippi, recently announced a new 38 cubic yard, struck—48 yard, heaped—capacity scraper combination.

The 600 hp M-R-S Model 250 Tractor provides ample power to pull the big scraper at speeds up to 34 miles per hour, with a substantial power reserve for maximum gradability. When necessary, traction to the drive wheels can be increased by use of the M-R-S hydraulic weight transfer feature.

To make most efficient use of the power and traction of the Model 250, M-R-S offers as standard equipment the Fuller R-1550 9-speed ROADRANGER® Transmission.

Designed for off-highway service with the largest high-speed diesel engines built, the semi-automatic R-1550 ROADRANGER features nine forward and two reverse ratios, all controlled with one gear shift lever. Short, even steps between gear ratios—averaging 38%—combined with pre-selected, automatic range shifts, permit proper gearing for all conditions at all times. Air powered countershaft inertia brake allows quick upshifts without double clutching. For faster work cycles, lower fuel consumption, longer engine life, less operator fatigue, GREATER PROFITS . . . specify Fuller. Your equipment dealer or manufacturer can recommend the most efficient, easiest-shifting Fuller Transmission for your specific operating requirements.

FULLER TRANSMISSION DIVISION MANUFACTURING COMPANY KALAMAZOO, MICHIGAN

Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

For more facts, use Reader-Reply Card opposite page 18 and circle No. 403

Tunnel superintendent for Kiewit, Peter Janopaul, Jr., seldom had his boots off during the drilling and lining operations.

Standard Steel opens new division facilities

New manufacturing and engineering facilities, costing about $500,000, have been opened in Los Angeles, Calif., by Standard Steel Corp. of that city.

The new plant, known as the Cyrogenics Division, will fabricate huge "vacuum-bottle-type", low-temperature rocket-fuel tanks for the missile industry. It is located across the street from Standard's main plant, together with an engineering building that contains 5,500 square feet of floor space for the engineering, quality-control, and drafting departments.

Roy C. Heacock is manager of the new division and Edward L. Maguire, sales manager.

New quality control test for Goodyear rubber

The Goodyear Tire & Rubber Co., Akron, Ohio, has developed a new quality control test for its synthetic rubber, Plioflex, which gives compounders predetermined assurance of rubber processing ability and uniformity. The new test, which can also be used as a reliable measure of the effects of premastication upon rubber compounds, will pass only rubber which falls within prescribed limits of processing uniformity.

Deere completes new unit, expands industrial line

The John Deere Industrial Division, Deere & Co., Moline, Ill., has completed its new industrial manufacturing unit in Moline, Ill., for the production of equipment for use with the firm's industrial tractors. The new 1-story building covers 89,000 square feet. Four new additions are under way at the John Deere Dubuque Tractor Works, Dubuque, Iowa. The expanded plant is adding to its line three new economy industrial tractors, two new diesel wheel tractors, and an elevating scraper combination.

Steel industry geared for peak demands

The steel industry is prepared to meet any demand for structural members during the foreseeable future. This, basically, was the theme of a seminar held last month under the auspices of the Bethlehem Steel Co., the Lehigh Structural Steel Co., American Institute of Steel Construction, and Lehigh University. It was attended by editors and writers from technical and trade publications.

The expansion program was instituted at Bethlehem between 1953 and 1956 in anticipation of the future heavy demand for structural shapes. Today the company has a capacity of 210,000 tons per month of structural shapes. Bethlehem, it was stated, has over 40 per cent of the nation's structural-shape rolling capacity. At the Bethlehem, Pa., plant, structurals use up about 18 per cent of ingot capacity.

The construction industry was assured of an adequate supply of all the structural shapes that are and will be needed because of the recently completed expansion program.

The steel fabricators also made similar claims concerning their ability to keep pace with demand. Research and technological progress in such things as high-speed welding, high-strength bolting, plus installation of better equipment and modernization and expansion, have, according to H. B. Dietrich, president of the American Institute of Steel Construction, added to the industry's capacity. Any peak demands could easily be met, according to Dietrich, by running multiple shifts.

Wheeling personnel news

The Wheeling Corrugating Co., Wheeling, W. Va., has appointed Gilbert M. Long as general sales manager responsible for all areas of the firm's operations. The company produces galvanized sheets, roofing, culverts, roof deck, and metal lath for the construction industry.

Low cost SAND BLASTER

Complete, $29.95

Removes rust · paint · carbon weld scale . . . to bare metal

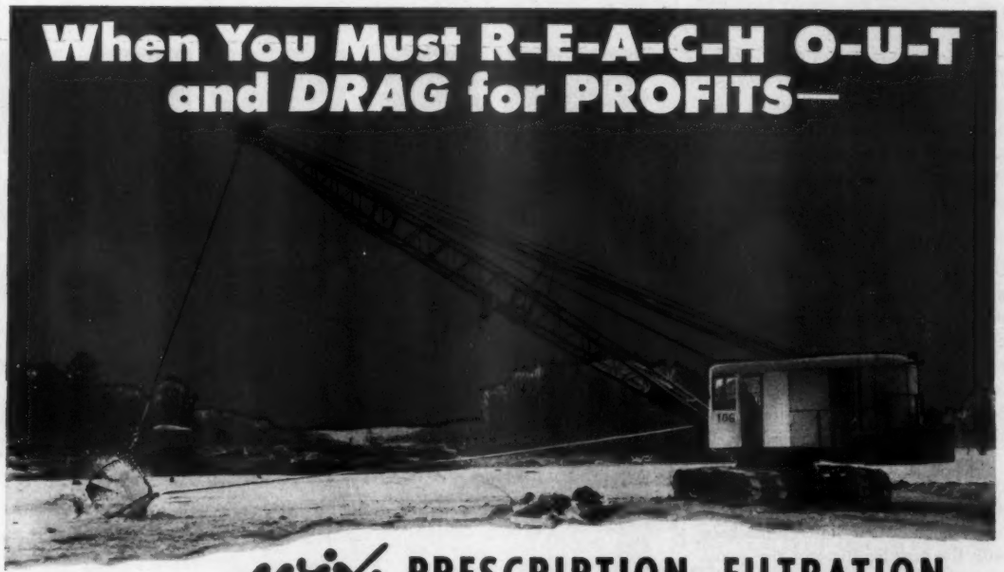
The Sandy Jet "Spot" Blaster quickly and easily cleans rust, paint, carbon, dirt, and weld scale right down to the bare metal from body moldings, seams, corners, "blind-spots", and engine parts. Finger-tip control lets you "spot clean" right where the rust is. Requires just a cardboard to keep abrasive confined. Operates on average garage compressor at 100 to 185 lbs. pressure. Abrasive capacity is 12 qts. silica sand, metal shot, nut shells, or aluminum oxides. Uses liquid detergents for engine and parts cleaning. Shipped complete with extra blast nozzle, $29.95. Satisfaction guaranteed or ship Blaster back in 10 days for full refund!

A. L. C. Company

646 Oak St. Dept. C-1 Medina, Ohio

For more facts, circle No. 404

When You Must R-E-A-C-H O-U-T and DRAG for PROFITS—



wix PRESCRIPTION FILTRATION puts you DOLLARS AHEAD!

Higher operating and maintenance expense, plus the rising costs of parts, supplies, and equipment combine to put the squeeze on contractors' profits. But, when you get more work out of your gasoline and diesel powered equipment with less time out for down time, *you save money.* And, money saved is PROFIT in your business!

Only WIX Oil and Air Filter Cartridges give your engines the exclusive Prescription Filtration that keeps out damaging dirt, grit, dust, and gummy sludge—keeps 'em running longer, more efficiently, and more economically. WIX Cartridges are built to take it—under the most grueling working conditions and tightest time schedules!

A WIX *extra* is the FREE Filter Survey of all your engines that shows the correct lube, fuel, and air filter Cartridge replacements for each. Your local WIX Wholesaler will stock a reserve supply of the particular Cartridges *you* need—no heavy inventory for you—one convenient source for fast filter service. Ask your Jobber, or write us—TODAY!

WIX CORPORATION • GASTONIA, N. C.

In Canada: Wix Corporation Ltd.: Toronto

WIX Filter Cartridges are engineered specifically for every engine in construction service . . . gasoline or diesel—mobile or stationary—for lube, fuel, and air. There are WIX replacement Cartridges for:

CATERPILLAR—DETROIT DIESEL
INTERNATIONAL
LE TOURNEAU—MURPHY
ALLIS CHALMERS
and all other
Construction Equipment

FILTER SURVEY

Accept this big aid to sound and economical maintenance . . . a physical check made by factory trained filter specialist.

FOR YOUR SPREAD

WIX CORPORATION, Dept. CE-1
GASTONIA, N. C.

Please send full particulars of your FREE Fleet Survey that saves dollars and down time.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 405

M

Robert G. Allen, president of Bucyrus-Erie Co.

Robert G. Allen has been elected president in charge of all operations of the **Bucyrus-Erie Co.**, South Milwaukee, Wis. He succeeds **William L. Little**, who will continue as chairman of the board and senior officer.

Victor C. Studley has been elected vice president in charge of finance, succeeding **Frederick C. Weiblen**, who has retired. Studley continues as treasurer. **John R. Warner** has been elected vice president in charge of purchasing.

The Marine and Industrial Engine Division, **Chrysler Corp.**, Detroit, Mich., has appointed **Howard R. Silverthorn** director of manufacturing; **Howard D. Peacock** chief engineer; and **Douglas T. Jaeger** director of personnel. Jaeger will administer personnel and labor-relations programs.

Silverthorn, who has been with the parent firm for 29 years, previously was plant engineer at the Trenton, Mich., engine plant. Peacock has been with the firm for the past five years.

Eugene H. Nelson has been appointed a district representative for the Koehring Division, **Koehring Co.**, Milwaukee, Wis. From Dallas, Texas, headquarters, Nelson will cover Louisiana, Texas, Oklahoma, and New Mexico.

C. E. Jones has been promoted to manager of engine sales for the Construction Equipment Division of **International Harvester Co.**, Chicago, Ill. For the past six years, Jones has worked out of the division's Melrose Park, Ill., headquarters, his last assignment being that of divisional supervisor of sales engineering and sales development.

Willard F. Hall has been named assistant sales manager of the Construction Equipment Division. For the past three years, Hall has been central regional sales manager for the division.

Ralph A. Elliott, a member of the firm for 25 years, has been appointed Central Region sales manager. This area includes 16 states in the middle United States.

P. D. Evans, assistant Western regional sales manager of the Construction Equipment Division, has been transferred in the same capacity to the division's Eastern region. Evans' new assignment puts him second in command of the 16-state area.

Raymond E. Melampy has been appointed safety engineer for Armco Drainage & Metal Products, Inc., subsidiary of **Armco Steel Corp.**, Middletown, Ohio. Melampy was formerly safety advisor in Armco's personal relations department.

The new sales promotion manager of **Richmond Screw Anchor Co.**, Brooklyn, N. Y., is **Ernest E. Trolio.** Trolio will be responsible for sales promotion, public relations, regional and national sales meetings, and dealer education.

Former comptroller **R. E. Howard** has been promoted to manager of the contracts administration department of **Davey Compressor Co.**, Kent, Ohio. In his new post, Howard will direct the processing of all large unit orders from the sales department through engineering and production to customers. In addition to these duties, he will retain his position as Davey credit manager and assistant treasurer.

Succeeding Howard as comptroller is **Gordon W. Schroedel**, former vice president in charge of finance, Ric-Wil, Inc., Barberton, Ohio.

James E. Determan is a newly appointed district representative for **Pioneer Engineering Division** of Poor & Co., Inc., Minneapolis, Minn. He will cover Delaware, Maryland, West Virginia, Ohio, North Carolina, Pennsylvania, with the exception of the eastern border counties, and all but three counties in Virginia.

Arthur E. Wigg is the new manager of truck-tire sales for the San Francisco division of **The General Tire & Rubber Co., Akron, Ohio.** He replaces William M. Boyd, who has been transferred to the firm's manufacturers sales division.

Leon L. Meyer, former manager of passenger tire sales for the Los Angeles division, has been promoted to manager of retail development for General Tire. He will have headquarters in Akron.

A new vice president of **Soiltest, Inc.**, Chicago, Ill., is **Thomas J. McNeil.** Formerly Eastern manager and public relations director, McNeil will continue public relations activities from the company's office in New York City.

YARDS AHEAD

CW-2 . N
A CO TE

MODEL CW-226

2-axle, self-propelled scraper designed for rated capacities of:

26.0 Cu. Yds. Struck
36.0 Cu. Yds. Heaped

Travel Speeds	to 34.4 m.p.h.
Load Capacity	78,000 lbs.
Interchangeable with Curtiss-Wright model CWD-321 Rear Dump	21 Cu. Yds. Struck 31 Cu. Yds. Heaped 70,000 lb. Capacity

CURTISS-WRIG ORI
SOUTH BE VI
SOUTH BE DI

Charles D. Bobbitt is the new sales promotion manager for the tractor-shovel line manufactured by the Trojan Division, **The Yale & Towne Mfg. Co.**, Batavia, N. Y. Bobbitt was previously product distribution manager of the Construction Machinery Division of Clark Equipment Co., and prior to that held the same position with The Frank G. Hough Co. of Libertyville, Ill.

Frederick W. Ackerman, president of The Greyhound Corp., Chicago, has been elected a director of the company, which manufactures material-handling equipment, locks, and builders' hardware products.

The **Waukesha Motor Co.**, Waukesha, Wis., has re-elected **J. E. DeLong** president; **C. E. Nelson, Jr.**, executive vice president; **J. G. Swain** vice president of sales; **N. H. Willis** vice president of engineering; **L. W. Youker** secretary and treasurer; and **J. J. Kleinbrook** assistant secretary and assistant treasurer. Also re-elected was the board of directors: DeLong, Nelson, Swain, C. P. Ross, M. R. Butler, H. P. Snyder, E. G. Bach, L. D. Harkrider, and Scott Lowry.

Everett Roberts has been promoted to assistant service manager. For the past 13 years, Roberts has been in charge of all field service activities for the firm.

N. K. Helding has been appointed assistant construction machinery sales manager of the Syracuse, N. Y., branch of **Allis-Chalmers Mfg. Co.**, Milwaukee, Wis. Helding formerly had the same position at the firm's Columbus, Ohio, branch. He joined the company in 1954 as construction machinery salesman at the Omaha branch.

Robert C. Johnson has been named district sales representative for the **Iowa Mfg. Co.**, Cedar Rapids, Iowa. He will represent the Cedarapids line of aggregate-producing, bituminous-mixing, and paving equipment in Arkansas, Louisiana, Oklahoma, and Texas. Johnson will have headquarters in Dallas, Texas.

Hugh Redditt has been named district representative for the General Sales District of **Electric Steel Foundry Co.**, Portland, Ore. He will work with the firm's construction and crushing equipment dealers throughout New Jersey, Maryland, Delaware, Virginia, and the eastern half of Pennsylvania.

Walter Shannon has been appointed director of pipeline engineering for the **Gulf Oil Corp.**, Pittsburgh, Pa. Shannon, who will have headquarters in the home office, will advise the company about new developments in pipeline design, construction, and maintenance. In addition, he will design new pipeline systems, review contractor proposals, and evaluate operational performance of pipeline systems in which Gulf has an interest.

Walter Shannon, director of pipeline engineering Gulf Oil Corp.

E. Duer Reeves has been elected executive vice president of **Esso Standard Oil Co.**, New York City. He has also been elected a director and vice chairman of the executive committee of the Esso board. Reeves has served as executive vice president of the Esso Research & Engineering Co. since 1949.

Malcom P. Parker has been named sales representative for the Leschen Wire Rope Division, **H. K. Porter Co., Inc.**, St. Louis, Mo. From Charlotte, S. C., headquarters, Parker will cover North and South Carolina and northern Georgia.

H. Robert Baer is Leschen's new sales representative in northeastern Ohio and northwestern Pennsylvania. He makes his headquarters in Canfield, Ohio.

Joseph S. Shapiro has joined the Engineering and Construction Division, **American Cyanamid Co.**, New York City, as a senior cost engineer in the cost engineering department. Shapiro was formerly a cost engineer with Merritt-Chapman & Scott Corp., also of New York City.

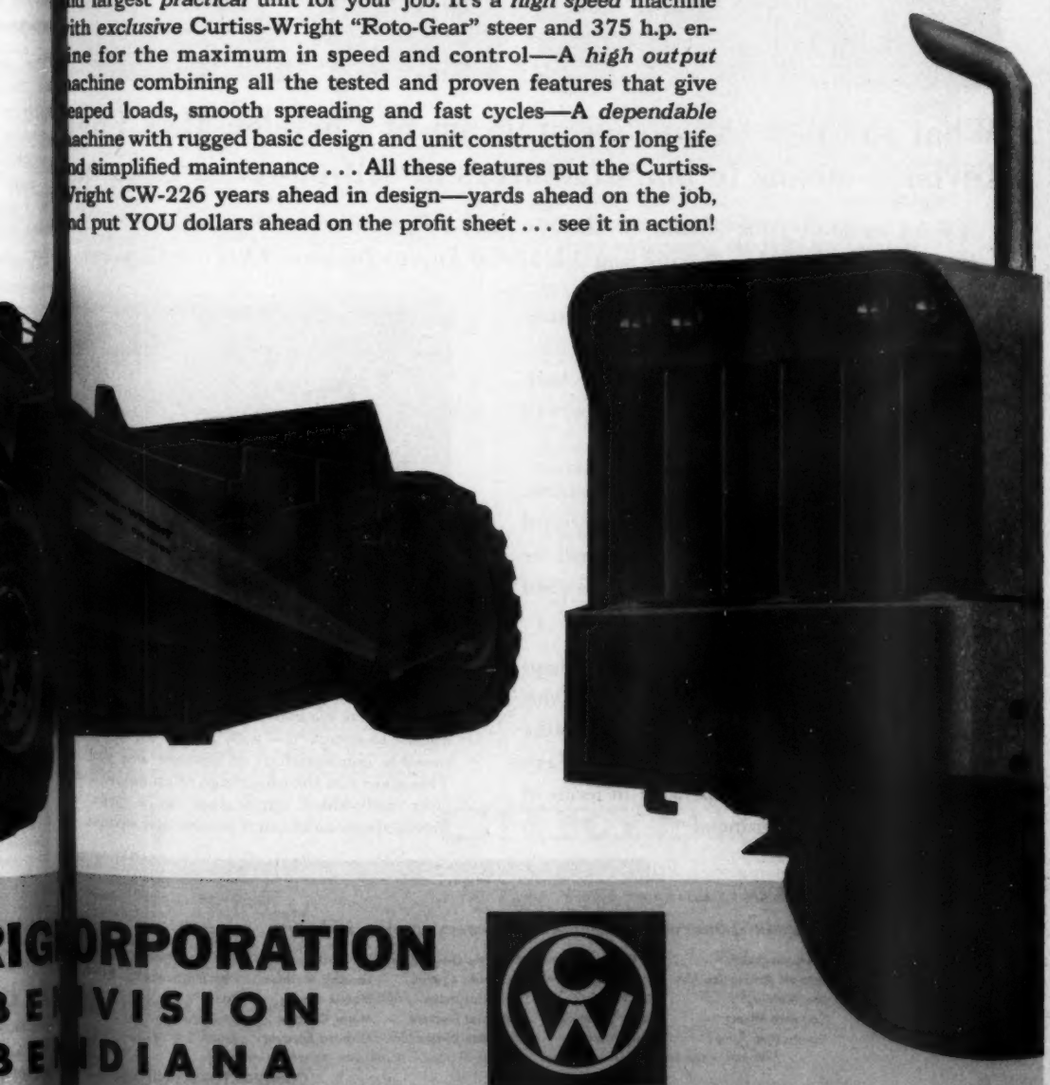
Dr. C. M. Vanderwaart has been appointed manager of the process design department of the Engineering and Construction Division. Dr. Vanderwaart, formerly a section manager in that department joined the company in 1940 as a chemist in its New Jersey plant.

G. A. Wynkoop has been assigned to the California and Nevada territory of the **Euclid Division, General Motors Corp.**, Cleveland, Ohio. He will work out of the firm's Western regional office at Oakland, Calif. This office is managed by M. H. Johnson.

For the past year, Wynkoop has been Euclid's district representative in Montana and the Canadian provinces of Alberta and Saskatchewan. Prior to joining Euclid, Wynkoop worked in sales for Pacific Northwest firms.

-2. NEWEST AND LARGEST OF
TE LINE OF EARTHMOVERS!

he 26 yd. CW-226 is the newest and largest addition to the urtiss-Wright line of self-propelled scrapers . . . and the newest nd largest *practical* unit for your job. It's a *high speed* machine ith exclusive Curtiss-Wright "Roto-Gear" steer and 375 h.p. engine for the maximum in speed and control—A *high output* achine combining all the tested and proven features that give eaped loads, smooth spreading and fast cycles—A *dependable* achine with rugged basic design and unit construction for long life nd simplified maintenance . . . All these features put the Curtiss-Vright CW-226 years ahead in design—yards ahead on the job, nd put YOU dollars ahead on the profit sheet . . . see it in action!



RPORATION
VISION
DIANA

CW

←For more facts, circle No. 406

Management

Clerical functions:

General Ledger

This is the thirty-eighth of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management and Heavy Equipment Operation, P. O. Box 527, Weiser, Idaho, and P. O. Box 8243, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management", published by the National Schools. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees at the foreman level or its equivalent, who need practical help in order to take complete charge of construction projects themselves.

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

While a Cash-Journal furnishes all the information any contractor needs to complete business records, including a monthly trial balance, the General Ledger is a summary of all the accounts listed in the different columns of the Cash-Journal sheet. The Ledger may be kept in just as much or as little detail as the individual contractor desires.

In the "Practical" Bookkeeping Systems put out by Frank R. Walker Co., Publishers, 173 W. Madison St., Chicago 2, Ill.—publishers of "Practical Accounting and Cost Keeping for Contractors"—there are indexes separating the different classes of accounts listed in the Cash-Journal sheet. Each class of accounts should be kept under its index heading. When items are posted from the Cash-Journal to the Ledger accounts, they are entered from a particular column heading in the Cash-Journal to the same index heading that is shown in the Ledger.

For instance, under the heading Accounts Payable in the Cash-Journal, the totals of both columns might be $785. Under the index heading Accounts Payable in the Ledger, the contractor has accounts with a lumber company and a cement company. The amounts of invoices and payments should be transferred from the Cash-Journal to the individual accounts of these firms, showing dates and amounts of all transactions. These entries should then balance with the total of the Accounts Payable columns in the Cash-Journal. The method is simple, and very little time is required to keep the books in first-class condition at all times.

Ledger accounts

The Ledger should contain just as few accounts as possible to furnish the desired information regarding the business. They should not be itemized in too much detail, because every entry requires additional clerical work, either for the contractor or his bookkeeper.

The following accounts will serve the purpose of practically every contractor's business, but different information—and additional ledger accounts—may be necessary.

Accounts Payable, Figure 1, should contain accounts with all firms or individuals from whom the contractor

What the new expansion program of Chrysler M&I Eng Division means to manufacturers of self-powered equipm

A joint message from Arthur S. Hudson (left), President and Lawrence E. Nels Vice President—Sales, Marine and Industrial Engine Division, Chrysler Corpora

Our division has recently undertaken the most far-reaching expansion of facilities, service and personnel in the history of our business. Much has already been done, more will soon be completed.

Details of all phases of this expansion have been outlined in a brochure, "The Forward Look in Industrial Power," which we will be pleased to send you if you will address a request to us on your executive letterhead.

But even more important perhaps than the details of our expansion is what this expansion means to you, our customers — the manufacturers of self-powered equipment. Let's look at each phase of this expansion in terms of how it will help *your* business!

CUSTOM ENGINE BUILDING FOR INDIVIDUAL APPLIC INCORPORATING SAVINGS OF AUTOMATED PRO

Production of Chrysler Industrial Engines h completely re-organized. Basic engine blo machined in the huge Chrysler automated plants. Production facilities of the divisio are devoted exclusively to building the engine as specified — with any of the thou possible combinations of options and acc This gives you the advantage of an engine b your individual application at a price incorporates automated production saving

Chrysler-powered equipment for every major industry

Air Compressors	Ditching Machines	Standby Generators	Lift Trucks	Petroleum Pumps	Sh
Aircraft Towing Tractors	Drilling Equipment	Hydraulic Cranes	Loading Machines	Pulp Machinery	Sno
Arc Welders	Fire Pumps	Industrial Hoists	Mobile Cranes	Road Pavers	Sno
Concrete Mixers	Farm Combines	Industrial Tractors	Motor Coaches	Road Rollers	Wi
Construction Pumps	Farm Tractors	Irrigation Pumps	Orchard Sprayers	Scoop Tractors	Yar

Figure 1

GENERAL LEDGER

Universal Portland Cement Co
208 So. LaSalle Street

DATE	ITEMS	Folio	✓	DEBITS	DATE	ITEMS	Folio	✓	CREDITS
Mar 12	By Note	1		10000	Mar 9	Merchandise	1		10000

Figure 2

GENERAL LEDGER — CONTRACT ACCOUNT

NAME Fred H Hilker — ADDRESS 176 Wayne Avenue — SHEET NO. 1
NAME OF WORK Fred H Hilker Residence — LOCATION 176 Wayne Avenue — JOB NO. 120

DATE	DESCRIPTION	Folio	✓	CONTRACT AND EXTRAS	CREDITS TO CONTRACT	NET AMOUNT CONTRACT	AMOUNT COMPLETED	DATE PAID	Folio	✓	AMOUNT PAID
Mar 1	Contract Amount			5625 00				Mar 21	1		7000
" 10	Extra plaster attic			120 00							
" 15	Omit metal lath				12 00	5733 00					
" 20	Amount completed	1		5745 00	12 00		10000				

ER PRICING AND DELIVERY WITH LEAD TIME REQUIRED ON ORDERS.

duction and production control is now co- nated under one roof. Production scheduling follow-up procedures assure you that your rs will be produced to exact specifications delivered on schedule with a minimum of time required. There is not only daily, but rly, contact between all our departments. ere required, "personalized" follow-through individual orders is possible and practical. he building of prototypes for testing in new lications has also been greatly accelerated.

ER FIELD SERVICE AND PARTS AVAILABILITY OUGH NEW ENGINE CENTERS, EXPANDED LER NETWORK.

Chrysler Industrial Engine Centers are now g established at strategic service points ughout the United States. Together with an nded dealer network, they will offer even most remote users of your Chrysler-powered ipment efficient, 24-hour service, plus imme- e delivery of replacement parts and engines.

Each engine center has a large and complete inventory of industrial parts and replacement engines available on regular and 24-hour emergency basis, delivered by special service trucks. In addition, each engine center has ample service buildings, tools and trained engine specialists to provide service for all types of Chrysler-powered equipment in the area.

Our factory service force has also been expanded in both regional and district offices to provide fast, on-the-job help for you and users of your Chrysler-powered equipment.

CONTINUOUS IMPROVEMENT OF ENGINE PERFORMANCE AND DEPENDABILITY THROUGH EXPANDED PRODUCT DEVELOPMENT AND RESEARCH PROGRAM.

Better and still better power for your particular application is the goal of our expanded research, development and field-testing program. The more economy, dependability, trouble-free performance we can build into Chrysler Industrial Engines, the more desirable your products are to your customers. In addition to improving present applications, we are particularly eager to work with manufacturers on pilot models to expand the range of Chrysler-powered applications, for we know the success of our product depends upon how well it works for you.

We hope that you will call or write to us about your power requirements. One of our sales engineers will bring you a new Chrysler Product Line Catalog and help you *select* and *price* the exact combination of engine, accessories and equipment to fit your specific application — *right at your desk.*

CHRYSLER

MARINE AND INDUSTRIAL ENGINE DIVISION
CHRYSLER CORPORATION • DETROIT 31, MICHIGAN

Marine & Industrial Engine Division
Chrysler Corporation, Detroit 31, Michigan.

☐ Please send me a copy of your new brochure, "The Forward Look in Industrial Power."

☐ Please have a sales engineer bring me a copy of your new Product Line Catalog.

NAME _____ TITLE _____

COMPANY _____ PRODUCT _____

ADDRESS _____ CITY _____ STATE _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 407

buys materials or supplies on an open account basis. Each account should show the amounts owed and the amounts paid. Where possible, only one entry should be made for an entire month's business. All of the invoices for any one concern should be totaled and only one entry made each month covering all of them.

Cash Account contains a summary of the month's cash transactions. Only one entry is made each month: the totals of the Cash Received and Cash Paid Out columns of the Cash-Journal.

Bank Account should contain a list of all banks in which money is deposited. At the end of each month the total of the Bank Account column in the Cash-Journal is posted to this account, showing the amount of deposits and checks. The difference is the bank balance at the first of each month.

Contract accounts

Contract Accounts, Figure 2, are with persons or firms for which the contractor does work on a contract basis. When a contract is received, the amount of the original contract, together with any extras, is entered in the first column, Contract and Extras. When deductions or credits affecting the original contract are made, whenever work is omitted or changed, the amount of each credit or omission is entered in the second column, Credits to Contract. The net amount of the contract is obtained by subtracting the total amount of the Credits to Contract from the total amount of Contract and Extras.

The first three columns on this sheet, headed Contract and Extras, Credits to Contract, and Net Amount Contract, are memorandum accounts and are used as a temporary record during the life of the contract. For this reason, entries in these three columns are never made through the Cash-Journal, and they are not used when taking off the trial balance.

The Contract Account acts only as a memorandum account until a payment on the contract has been requested, at which time the Contract Account becomes the Accounts Receivable to the extent of the amount requested.

(Continued on next page)

(*Continued from preceding page*)

Each month, or at stated intervals when invoices or applications for payment are made to the architect or owner, the amount of each invoice or application should be entered in the fourth column, Amount Completed. This column shows what portion of the work was performed each month and the total amount completed to date. It also gives the amount of money to which the contractor is entitled each month during the progress of the work.

As soon as the contractor is entitled to payment on his contract, the owner is debited in the Amount Completed column, and the Job Cost Account should be credited with the same amount. These amounts are first entered in the Cash-Journal and then posted to their respective Ledger accounts at the end of each month. (Keep in mind that credit is money going out and debit is money going into the business.)

As payments are received from the owner, the dates and amounts of all payments are entered in the right-hand columns of the sheet headed Date Paid and Amount Paid. These items are also posted from the Cash-Journal. When the contract has been completed and the owner has paid the contractor in full, including retained percentage, the totals of the three columns headed Net Amount of Contract, Amount Completed, and Amount Paid should balance.

When taking off for trial balance, the total of the fourth column, Amount Completed, forms the debit account, and the last column headed Amount Paid forms the credit account.

When the contractor lets a subcontract for any branch of work, an account is opened with each subcontractor. The amount of the original subcontract, together with any extras, is entered in the first column headed Subcontract and Extras. Entries are made the same way they are made for Contract Accounts.

Job Cost Account sheets, such as the one shown in Figure 3, are used for keeping an accurate record of the cost of each job or contract. As expenditures are made for labor, material, subcontracts, and other miscellaneous job expenses, they are entered on this sheet under the proper heading.

The totals of the four columns—Labor, Material Subcontracts, and Miscellaneous Expense—give the total cost of the job and enable the contractor to tell at a glance the total of each class of expenditure.

Each month, or at stated intervals, when invoices or applications for payment are made to the architect or owner, the date and amount of each invoice or application should be entered on the right-hand side of the sheet under Credits. When taking off a trial balance, the total of the four columns forms the debit account, and the right-hand column, Credits, is the credit account.

Interest and Discount Account contains the total of all money paid in interest, all money received as interest, and all money saved by taking advantage of cash discounts. The total of the Interest and Discount column in the Cash-Journal is transferred to this account at the end of each month.

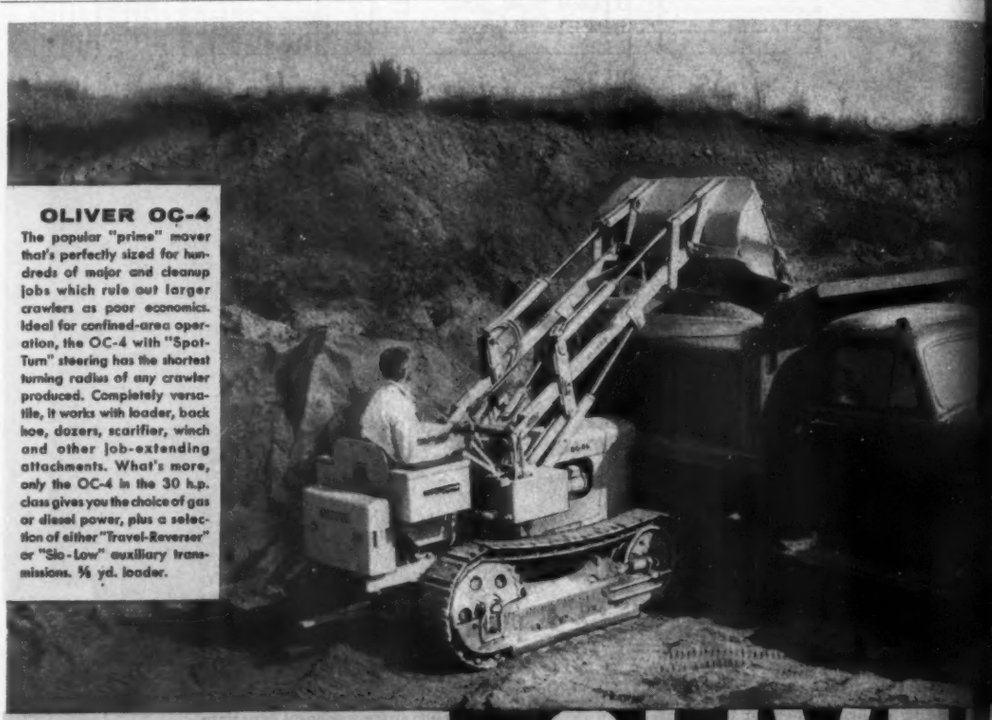
Notes Payable Account contains a record of all notes given to banks or to individuals for money borrowed or in settlement of accounts. These totals are merely transferred from the Notes Payable column in the Cash-Journal at the end of each month.

Notes and Accounts Receivable contains a record of all money due the contractor for which he holds notes for materials or supplies sold, or any other accounts not covered by contract.

General Expense Account, Figure 4, contains an accurate record of the overhead or general expense of conducting the business. It enables the contractor to tell at a glance what it costs him as a whole and how the overhead expenses are apportioned. Just one entry is made on this sheet each month, when the totals are brought forward from the four General Expense columns in the Cash-Journal.

There are two methods of handling the General Expense Account in the Ledger. In the first method, the total cost of the General or Overhead expense of conducting the business is carried as a separate account and at the end of the year is charged off in full, reducing the gross profits of the business by just that amount.

The other method is to charge the various jobs with a certain percentage of the General or Overhead expense. This is extremely difficult to do with any degree of accuracy, because a contractor never knows at the beginning of a year the volume of business he will perform during that



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year, and it will be necessary to wait until the end of the year before the total of the General or Overhead expense can be apportioned among the various jobs. Most contractors will have a certain Overhead expense regardless of the amount of work performed, so it is advisable to carry a separate General Expense Account and not attempt to prorate it among the various jobs.

Tools and equipment

This account should contain a complete record of all expenditures for machinery, tools, and equipment necessary to conduct the business. A columnar sheet presents a satisfactory method for keeping accounts of this kind, using one double column (Debit and Credit) for each piece of large equipment or different classes of equipment, as these items will all have to be depreciated at different rates for income-tax purposes. A number of short sheets may be inserted between the long columnar sheets for keeping records on any number of pieces of equipment.

Another method is to use a separate ledger sheet for each large piece of equipment, especially where there are a great many to be accounted for.

Repairs that do not prolong the life of the machinery or equipment should be charged as a direct expense and written off in full at the end of each year. This also applies to labor for cleaning, oiling, and maintaining the equipment for ordinary use.

There are two methods of handling the Tool and Equipment Account in the ledger. One is to charge the original cost of each piece of equipment to the proper column or account, and at the end of the year depreciate each piece of equipment in accordance with the schedule prepared by the Department of Internal Revenue. Using this method, the various jobs on which the tools and equipment are used are not charged with the use of same. This permits the various Job Cost Accounts to show a larger profit, but the Tool and Equipment Account will show a loss at the end of each year.

The other method is to charge the original cost of each piece of equipment in the same manner as above. However, using this method, each job is charged a regular weekly or monthly rental for all tools and equipment delivered and used on that job, and the Tool and Equipment Account is credited with the amount of such rentals. When this method is used, the Tool and Equipment Account will usually show a profit, while the various Job Cost Accounts will show a smaller profit, but a more accurate cost, than when the first method is used.

Truck and auto expense

This account enables the contractor to keep an accurate cost record of operating trucks and automobiles used in the business. A columnar form should be used when separate costs are desired for repairs, oil, gas, tires, etc., for both trucks and automobiles.

Furniture and Fixtures Account is a record of all money invested in furniture, filing equipment, typewriters, etc. Strictly speaking, this is an asset account upon which money may be realized or credit extended, but many firms carry this equipment at a nominal sum.

Entries for all purchases of office furniture and equipment should be entered on the debit side of the sheet, and at the end of each year a certain percentage of the total cost should be charged off for depreciation. These items should be entered on the credit side of the sheet. If sales of office furniture and equipment are made, this account should be credited.

Drawing Accounts are a record of all money withdrawn from the business for personal use of the proprietor or partners. The amounts are entered in the proper column in the Cash-Journal and transferred to the corresponding one in the Ledger. If the business is conducted as a corporation and the officers or active stockholders draw a regular salary from the business, these amounts are entered in the Cash-Journal under General Expense-Salaries, where they are chargeable as a general expense of conducting the business. If any of the active stockholders are superintendents or foremen, their salaries should be charged direct to the jobs on which they are working.

Tax account

A double-page columnar sheet furnishes a simple method of keeping all Tax Accounts under one heading and on one sheet, carrying both Deduction and Payment columns for each class of taxes. The Debits and Credits for each column are totaled and transferred to the Totals column at the extreme right side of the sheet. This keeps all classes of taxes subdivided for ready reference, while

(Continued on next page)

OLIVER OC-15

The greatest power-to-weight ratio ever offered in any crawler in the 110 h.p. class! A tremendous producer in all dozer and angleblade work, the OC-15 has the built-in stamina to make it first for continuous service in the hardest, dirtiest jobs you can give it...and last in upkeep because of its heavy-duty, service-saving design, reinforced and trussed at every stress point. Long 87½-inch track has proper ground contact to give high-flotation and tremendous traction to utilize the great reserve of power. Available also as OC-156 2¼-yd. "unitized" loader model.

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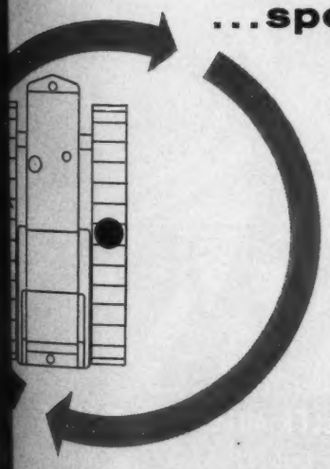

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(Continued from preceding page)

furnishing a total of all taxes collected and paid.

Some contractors prefer to charge the taxes direct to the various jobs incurred; others prefer to carry a Tax Account in the Ledger and charge all classes of taxes to this account and write it off at the end of the year as one of the costs of doing business. This is the simplest method, but it does not give the true cost of the job, because the cost of Old Age Benefit and Unemployment Compensation Insurance should be estimated as a part of the cost of the job when the estimate is prepared.

When Old Age Benefit and Unemployment Compensation Insurance are to be charged as a direct job cost, the Tax Account should be handled in the same manner. At the end of each month or at the completion of the job, the amount of tax chargeable to each job should be computed and charged direct to the Job Cost Account, and the Tax Account in the Ledger should be credited with the same amount.

Workmen's Compensation and Public Liability Insurance should be charged direct to the job to which they apply. A contractor usually pays a minimum premium in advance, and this should be carried in the Insurance Account in the Ledger. At regular intervals, the payrolls are audited by the insurance company and bills rendered according to amounts and labor classifications on each job. These amounts should be charged direct to the various Job Cost Accounts at the time the bills are received, as they are a direct job cost. Insurance covering the job during construction should be charged direct to the job covered.

Profit and loss

This account is a record of the profits and losses incurred in the business. After a job has been completed and all charges and entries made, it is necessary to make the closing entries in the accounts affected before the accounts can be closed.

If the job is a loss and the total cost of the job is more than the contract price, the Job Cost Account should be credited with the amount of the loss, and the Profit and Loss Account should be debited with the same amount. The difference between the Debit and Credit columns in the Profit and Loss Account should show

(Continued on next page)

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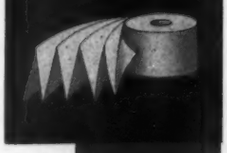

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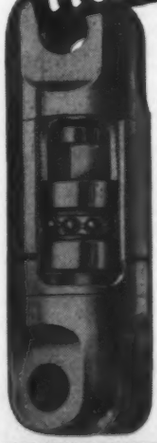

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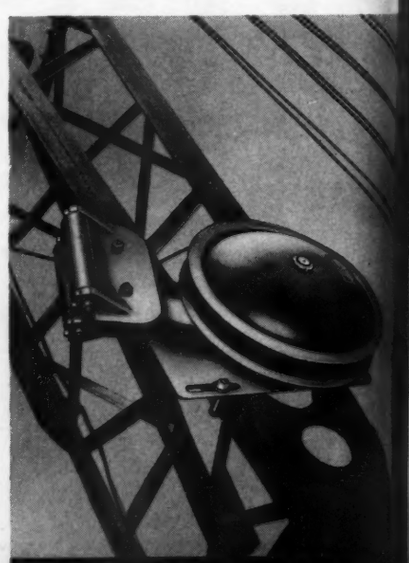

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(Continued from preceding page)

the profit or loss from the business.

At the end of each month, when all invoices have been checked, entered in the Cash-Journal, and posted to their respective Ledger accounts, a trial balance should be taken off to show that the books balance. This consists of taking the Debit and Credit totals of each account, or each control account, and listing them on the Trial Balance for a specific entries are correctly made, the totals of the Debit and Credit columns are the same.

If the amounts have been correctly posted to the proper Ledger accounts, the Trial Balance for a specific month should be the same as given in the Cash-Journal, although it is customary to carry the totals for the year in the various Ledger accounts.

While there is only one entry for each Control Account listed on the Trial Balance sheet, there will probably be several individual accounts under each Control Account in the Ledger. In these instances, take the totals of the Debits and Credits of the different accounts and enter them as one total on the Trial Balance sheet. This will reduce the number of entries to a minimum and make bookkeeping easier.

The various column headings in the Cash-Journal sheet are called Control Accounts, because all Debit and Credit entries applicable to that particular class of accounts are entered in this one double column. For instance, under the heading Accounts Payable, the contractor may have accounts with 50 to 200 companies, but this one heading in the Cash-Journal carries all of the entries pertaining to this particular class of accounts.

In this instance, it is advisable to carry a Cap Sheet, which is the first sheet under the index heading Accounts Payable. The monthly totals of this account are posted from the Cash-Journal to the Cap Sheet in the general Ledger. This sheet is used for taking off the trial balance, and the various individual accounts under this heading must then balance with the Cap Sheet.

Many firms carrying on an extensive business prefer to use a separate ledger for certain classes of accounts. Where separate ledgers are used for different classes of accounts, one sheet is carried in the General Ledger for Accounts Payable, Contract Accounts, etc., and the total for each class of accounts is posted from the Cash-Journal to the General Ledger accounts each month. The detailed entries pertaining to each class of accounts are then posted to their particular account in the ledger. The Debit and Credit entries in each of these different ledgers must balance with the Control Account in the General Ledger.

Yearly statement

At the end of each year, it will be necessary to take the totals of all accounts listed on that portion of the sheet headed Yearly Statement of Accounts. The Asset column should show everything owned and the amount; the Liability column furnishes a record of everything owed by the company at the year's end.

The difference between the Asset and Liability columns is the net worth. The difference between the net worth for the past year and the net worth of the current year, will be the gain or loss for the year.

The yearly income recapitulation furnishes the information from which government income-tax returns should be made up. It gives a complete record of all business done—the amount, cost, and profit on all completed contracts. The difference between the gross profit and the expense of conducting the business, together with any other items

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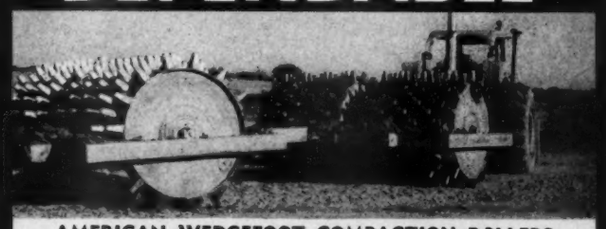

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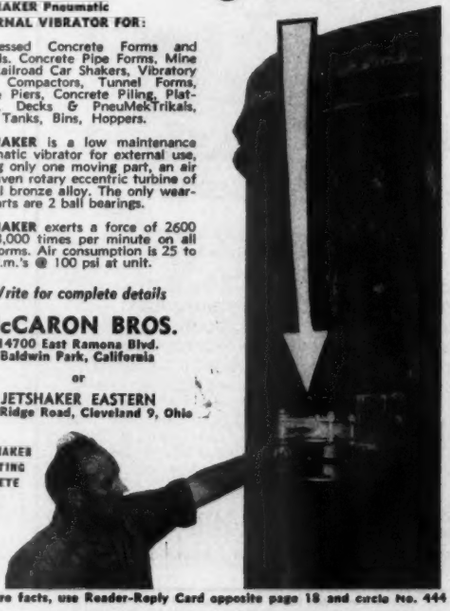

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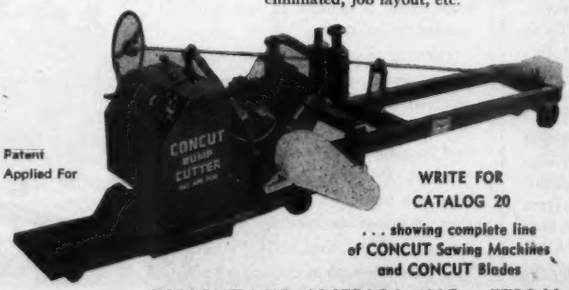

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Figure 3.

GENERAL LEDGER

JOB COST ACCOUNT

NAME OF WORK Fred H. Hillis Residence LOCATION 176 Wayne Avenue SHEET NO. 1

ARCHITECTS OR ENGINEERS Smith & Brown OWNER Fred H. Hillis JOB NO. 120

FORM 148 FRANK B. WALKER COMPANY, PUBLISHERS, CHICAGO

PRACTICAL	DATE	DESCRIPTION	Folio	✓	LABOR	MATERIAL	SUB CONTRACTS	MISC. EXPENSE	TOTAL COST	✓	CREDITS
	Mar 8	City Lumber Co.	J1			29500					
	12	Cement from Stock	J1			16000					

GENERAL LEDGER

GENERAL EXPENSE ACCOUNT

NAME John Smith & Co., Contractors ADDRESS 412 Bee Bldg. SHEET NO. 1

FORM 150 FRANK B. WALKER CO., PUBLISHERS, CHICAGO

PRACTICAL	DATE	DESCRIPTION	Folio	✓	RENT, LIGHT AND HEAT	OFFICE EXPENSE	OFFICE SALARIES	MISC. EXPENSE	DATE	Folio	✓	CREDITS
	Mar 31	March Expenses			6000	1100	8000	1240				

Figure 4.

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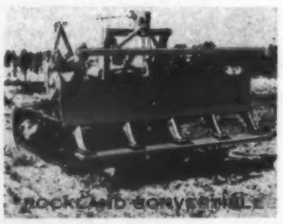

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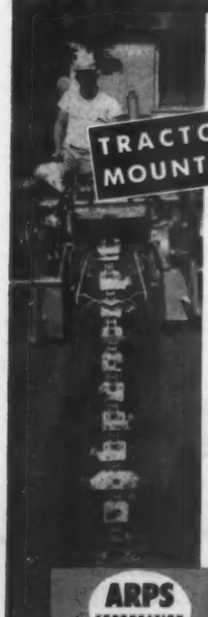

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(Continued from preceding page)

of income, is the net income for the year, upon which the tax return is based.

Depreciation on tools and equipment, trucks, automobiles, etc., is a variable item. The Department of Internal Revenue issues a complete schedule giving the average life allowed for all classes of construction machinery. It is advisable to consult this schedule before closing the books or preparing income-tax returns.

Closing the books

At the end of the year, it will be necessary to close the books, showing the profits and losses accruing from contracts—write off depreciation on plant and equipment, trucks, and automobiles, etc.—in order to arrive at the Net Income from the business. This is necessary before starting a new set of books at the beginning of the year and for making up income-tax returns.

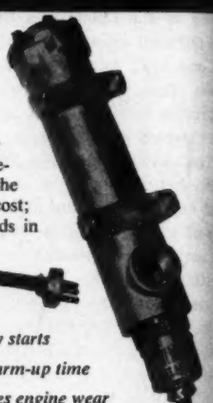
All closing entries must be made through the Cash-Journal and then posted to their respective Ledger accounts. Any balance in the Cash and Bank accounts is carried over into the next year's business. All other accounts that have not been completed at the end of the year are carried over into the next year's business.

All jobs completed during the year are closed. If, for instance, a job amounted to $5,500, the amount will show in the credit column of the Job Cost Account sheet in the Ledger. If the total of the columns headed Labor, Materials, Subcontracts, and Miscellaneous expense is $4,950, the difference between the cost of the job and the amount of the contract is the profit on the job. The difference, $550, is debited in the column headed Total Cost.

Turning to the Profit and Loss Account sheet, this same amount is credited to the account. This transaction closes the Job Cost Account and transfers it to the Profit and Loss Account. However, if the job results in a loss instead of a profit, the Job Cost Account is credited with the amount of the loss, and the Profit and Loss Account is debited with the amount of the loss. This same method

(Continued on next page)

KIM Hotstart electric pre-heater for Diesel Engines



KIM HOTSTART pre-heaters circulate hot water through engines when they are not in use; protect them against bitter winter weather; keeps engines responsive to the touch of the starter. Lightweight; low cost; high in savings. Thousands in use.

★ *Quick easy starts*
★ *Saves warm-up time*
★ *Reduces engine wear*
★ *Cuts maintenance costs*
★ *Easy to install*

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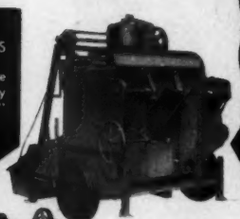
KIM HOTSTART MANUFACTURING COMPANY
West 917 Broadway, Spokane 1, Washington

For more facts, circle No. 416

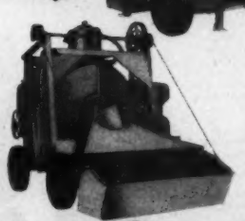
MODEL 3½ST
3½ cu. ft. tilting drum; is a standard ½ bag contractor's machine.

MODEL 65-CRT
Gilson's one bag mixer with power loader

MODEL 165
Has a three bag capacity with a 74" wide skip.



MODEL 115-CRT
Gilson's two bag mixer is sturdy frame heavy duty mixer.



Gilson machines are backed with 47 years of manufacturing experience. Machines are equipped with Timken Bearing equipped.

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PROFIT AND LOSS ACCOUNT

Gross Profits and Losses from the Job Profit and Loss Account Sheet		Debit	Credit
	Job Profits		$7,368.00
	Job Losses	$ 190.00	
Total Job Profits			$7,178.00
DEDUCTIBLE EXPENSES			
General Expense—Rent	$ 495.00		
Light, Heat and Power	73.60		
Office Salaries	720.00		
Officials' Salaries	2,500.00		
Miscellaneous Expenses	326.00		
Taxes and Insurance	57.30	$4,171.90	
Tools and Equipment—Depreciation		230.00	
Automobile and Trucks—Depreciation		252.00	
Truck and Automobile Expense		415.00	
Furniture and Fixtures—Depreciation		25.00	
Interest Paid		112.00	
Interest and Discount Earned			262.00
TOTALS		$5,205.90	$7,440.00
Net Profit from Business			$2,234.10

Figure 5

is used in closing all Job Cost Accounts in the Ledger.

Items such as Notes Payable, Notes and Accounts Receivable, Cash Account, and Bank Account should be closed out at the end of the year, if possible. Any unpaid notes due or receivable will have to be carried over into the following year. Other items, such as Tools and Equipment, Furniture and Fixtures, and General Expense should be closed out.

A typical Profit and Loss Account should look much like Figure 5. To close out this entry, a contractor would debit the Profit and Loss Account with $2,234.10 and credit the Surplus Account with the same amount. The surplus is carried forward in the next year's books. After balances are transferred from the old year's books, a new trial balance is taken to insure that all entries are correct, and books are in balance for the beginning of the new year.

(Next month's article will deal with "Clerical functions: Timekeeping and Payrolls".)

Air Reduction forms new firm with Mastic Tile

Air Reduction Co., Inc., and The Mastic Tile Corp. of America, both of New York City, have formed the Cumberland Chemical Corp. for the production of materials for use by Mastic Tile.

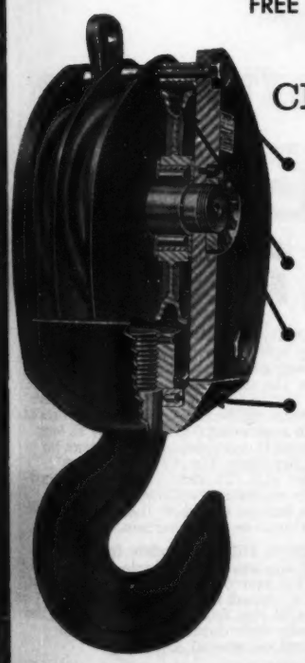
The new company, in which Air Reduction holds a 60 per cent interest and Mastic Tile 40 per cent, will construct and operate a $10 million plant at Calvert City, Ky. The plant, expected to be completed in 1960, will be adjacent to the existing Air Reduction facilities.

Cumberland Chemical will be managed by Air Reduction Chemical Co. C. J. McFarlin, president of the Chemical Co., will also serve as president of Cumberland. John A. Hill, president of Air Reduction, is chairman of the new firm, and Seymour Milstein, president of Mastic Tile, is vice chairman.

Clark Equipment names

Monte Joe Harrison has been appointed district representative for the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich. From headquarters in Arlington, Texas, Harrison handles the Michigan line of construction machinery in Texas and Oklahoma. He succeeds Clarence E. Zermer, now district representative in Oregon, Washington, British Columbia, and Alaska. Zermer works out of Bellevue, Wash.

Completely
STREAMLINED
FREE OF ALL OBSTRUCTIONS



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POWER BUGGIES

WATSON-CMETCO Power Buggies at work on Peter Kiewit Carquinez (Calif.) Bridge approach job.

YOU'LL PLACE MORE CONCRETE FASTER, AT LOWER COST, with job-proved CMETCO Power Buggies on the job. Here's why:

* UNEQUALLED MANEUVERABILITY—51" turning radius, easy automotive-type steering and controls, and instant reversing make CMETCO Buggies fast and easy to handle even on narrow ramps and tight, tricky platforms.
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Dewatering was a major job at the start of work on this Columbia River dam near Wenatchee, Wash. Manifolds lead the water into the river. On the trestle are 5 Byron Jackson 12-inch pumps and 12 Wintroath 12-inch pumps.

Huge bank of pumps holds key to work on Rocky Reach Dam

Progress on the first-stage construction at Rocky Reach Dam on the Columbia River near Wenatchee, Wash., hinged on the operation of 45 or more big pumps. In addition to building a large cofferdam in the river, the contractor had to install a ring of wells around the land side of the project to intercept the flow of ground water. With these units installed and in operation, construction was able to hit a good stride on the first stage of this $273.1 million hydroelectric project.

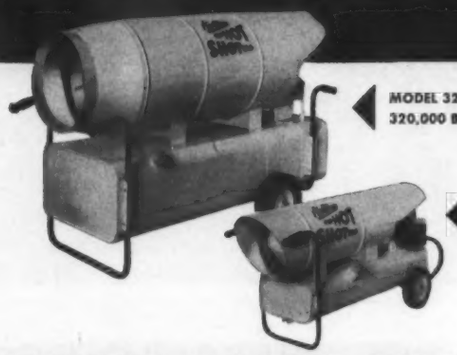
Rocky Reach Dam Builders, the successful bidder for Stage I, was a joint venture of Arundel Corp., Baltimore, Md.; L. E. Dixon Co., San Gabriel, Calif.; The Hunkin-Conkey Construction Co., Cleveland, Ohio; and American Pipe & Construction Co., South Gate, Calif.

The 775,000-kw generating plant is being built for the Public Utility District No. 1 of Chelan County, Wash., and is being financed entirely by revenue bonds. Plans were prepared by Stone & Webster Engineering Corp., Boston, Mass., and this firm is also supervising construction.

Kelley Profitable

HOT SHOT

SPACE HEATERS



MODEL 320 KHA
320,000 BTU/HR

MODEL 120 KHA
120,000 BTU/HR

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★ *Heats buildings during construction.*

★ *Dries, warms construction materials.*

★ *Warms workmen and work areas, outdoors or in.*

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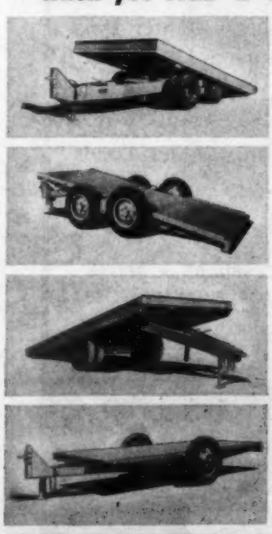
even the BIG rigs drive on

OTG — 15 TON
$2595.00*

without skids, cribbing or jacks . . .
when you load 'n' haul by MILLER Tilt-Top



• 30,000 lb. capacity is combined with Tilt-Top speed, convenience and safety . . . in this big, gooseneck Miller Tilt-Top. It saves the extra manpower and time usually lost in loading and unloading more cumbersome flatbeds. A massive oak decked platform measuring 8 x 16 ft. — 20 ft. long if you want it, provides plenty of room for hoes or draglines, big crawlers, pavers and other rigs. Tandem axles are mounted on freely oscillating walking beams that ride the bumps and dips independently for less jarring over rough terrain.

A variety of Tilt-Top models (as shown at left) equipped with single or tandem axles . . . over or between-the-wheels platforms . . . speed between-job hauling of all sorts of rigs from 4 to 15 tons . . . can often help save duplicating expensive equipment on several jobs.

Get the full story on these production boosters at your Miller distributor today!

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Miller Tilt-Top Trailer

*F.O.B. Milwaukee, Wisconsin
Complete with platform and tires. Brakes and optional equipment extra.
*Plus 10% Federal Tax

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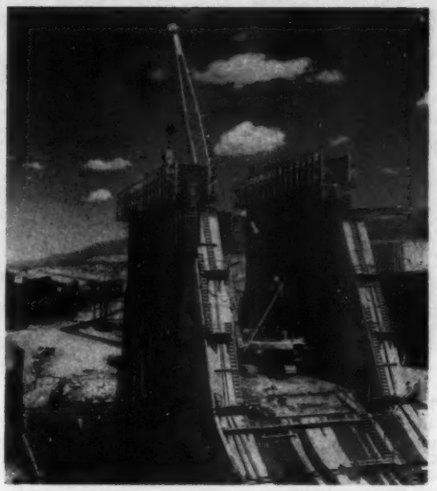


The Manitowoc 4500 with 140-foot boom swings a Gar-Bro 4-yard bucket to one of the spillway piers. Job-built forms are made in 35-foot panels for the 10-foot lifts of concrete.

The L-shaped concrete gravity dam and powerhouse will be nearly 3,000 feet long, with an earth cutoff dike extending 2,000 feet across the valley from the east abutment. The dam rises to an average height of 127 feet above bedrock.

Stage I contract

Work on the $12 million first-stage contract began with the cellular cofferdam and the cutoff dike. The cofferdam was built under a subcontract by LeBoeuf-Dougherty, Inc., Richmond, Calif. Goodfellow Bros., Inc., Wenatchee, Wash., subbed the dike excavation.

The big U-shaped cofferdam, extending out from the east bank to enclose the spillway area, was formed with 24 cells, each 60 feet in diameter. Steel-sheet piles from 50 to 80 feet long were driven around a steel template by a P&H crane using a Vulcan 5,000 steam hammer. Spaces between the cells were closed with small interlocking closure cells.

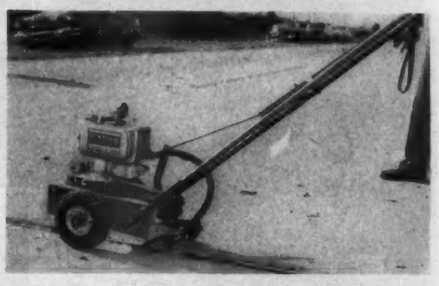
The valley floor is a deep deposit of coarse gravel through which water

(*Continued on next page*)

JOINT AND CRACK PROBLEMS?
IN CEMENT & BITUMINOUS CONCRETE

THE WINDSOR ROUTER

In use from Dow Airfield in Maine to Disneyland in California. 400,000 linear feet of joint & crack cleaning and routing completed in Connecticut.



LOW ORIGINAL COST • LOW OPERATING COST

A light, simple machine, the WINDSOR groover and joint cleaner leaves a clean face of newly exposed cement or bituminous concrete with NO spalling. Bits can be resharpened a number of times. The machine has been used on many projects, highways, bridges and airfields, to groove uncontrolled cracks as well as for joint maintenance.

WINDSOR MACHINERY CORP. 3311 Berlin Turnpike, Newington 11, Conn.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 425

reports G. A. Johnson,
Salina Sand Co., Inc., Mentor, Kansas

For over ten years Salina Sand Co., Inc., has successfully employed Eagle Washing Equipment. Various units have been added from time to time. Their present modern, versatile plant is pictured. Eagle Equipment includes a double 32′ Water Scalping-Classifying Tank with automatic bleeder valves and metering "splitter" gates, two Double Screw Fine Material Washers, one 22″ x 18′ and 36″ x 22′ and two Coarse Material Washers, one 24″ x 18′ Single Screw, and a 30″ x 18′ Double Screw. Salina's dredge with 10″ pump is equipped with a 75′ light duty Eagle "Swintek" Dredging Ladder, shown below.

With this plant they can readily meet material specifications of the state and other governmental bodies. They produce mason sand, concrete sand, cover material and road gravel. In addition to giving them the desired classifications of sand, Salina's Eagle plant thoroughly washes out clay and dirt frequently encountered in the deposit. The "Swintek" ladder on their dredge cuts costs and increases production by increasing intake of solids and by completely eliminating shutdowns from clogged suction lines.

Salina Sand Co., Inc., is happy with their Eagle Equipment—a sound investment protected by Eagle's vast experience and far-reaching service policy. Send for Catalog 58 on Washing-Classifying-Dehydrating Equipment or Catalog 83 on Eagle's Dredging Equipment.

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ENGINEERS • MANUFACTURERS
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Reasons for the world-wide success of FLYGT B-80L pumps:

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Instant pumping — no priming, no installation
Runs dry without damage
Takes high proportion of solids
Practically no maintenance or supervision
Frost- and fire-proof
6 hp, 3" hose, 330 GPM, max. head 170 ft.

Also: *FLYGT B-38L — 1.8 hp, 75 GPM, 70 lbs, max. head 90 ft., 1½" hose; FLYGT B-80 Marine—6 hp, 330 GPM, max. head 145 ft., 3" hose; FLYGT B-150/200L — 65 hp, 3,000 GPM, max. head 220 ft., 6" or 8" hose, 1200 lbs. Higher heads with FLYGT pumps in tandem.*

For more facts, use Reader-Reply Card opposite page 18 and circle No. 424

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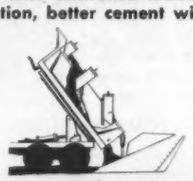

Sioux City Foundry & Boiler Co.

EAST 8th & DIVISION SIOUX CITY, IOWA PHONE 5-7967

For more facts, use Reader-Reply Card opposite page 18 and circle No. 427

This C. S. Johnson plant, producing up to 2,000 yards of concrete per day on first-stage construction, has five bin compartments with a total aggregate storage of 600 tons. The two big cement silos hold 900 barrels each. On the lower platform are three Koehring 2-yard tilt mixers which discharge to a 9-yard wet-batch hopper. Low-bed trailers haul Gar-Bro 4-yard buckets to the cranes.

(Continued from preceding page)

flows freely. To intercept this flow, it was necessary to construct a ring of wells surrounding the land side of the work area.

Installed in the wells were 19 Wintroath 12 and 10-inch vertical turbine pumps powered by electric motors ranging from 25 to 200 horsepower. The units, made by Wintroath Pumps, Alhambra, Calif., had pumping capacities ranging from 1,500 to 3,000 gpm. The individual pumps were connected into large manifolds that discharged into the river at the upstream and downstream ends of the cofferdam.

Three galleries of pumps inside the cofferdam did the initial dewatering, and some of them continued in operation to hold down the seepage. Among the pumps in these setups were five Byron Jackson 12-inch vertical turbines with 125-hp motors; 12 Wintroath 12-inch turbines powered by 100-hp motors; and 27 Fairbanks-Morse propeller pumps powered by 200-hp motors. The latter were rated at 14,000 gpm, while the turbine pumps carried ratings of 5,000 to 5,500 gpm. All of these pumps discharged into manifolds which led out over the cofferdam into the river.

Excavation

Most of the 1.75 million cubic yards of excavation for the first-stage foundations and the east-bank dike was gravel and other river-bottom deposits, which were readily loaded by the Lima, Manitowoc, Bucyrus-Erie, and Northwest shovels and hauled by "Euc" and Mack end-dumps. Only a small amount of drilling and blasting was necessary to prepare the underlying rock for the footings.

The east-bank subsurface cutoff dike is actually a huge trench backfilled with select materials. Hence its shape and construction do not conform to conventional ideas of a dike.

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Replace

with *DEPENDABLE*

CONTINENTAL RED SEAL POWER

In highway hauling, as elsewhere, profit margins continue to shrink, and wise choice of rolling stock becomes more essential than ever. That is why more and more truckers are replacing original equipment engines with rugged Continentals, engineered expressly for the job. Choose from the models listed below. See your distributor today.

RED SEAL TRANSPORTATION ENGINES

GASOLINE

Model	Cyl.	Displ.	Bare Engine H.P.
N4062	4	62	26.3 @ 3500 RPM
Y4069	4	69	28.0 @ 3400 RPM
Y4091	4	91	36.0 @ 3400 RPM
F4124	4	124	47.0 @ 3200 RPM
F4140	4	140	52.0 @ 3200 RPM
F4162	4	162	58.0 @ 3200 RPM
F6186	6	186	77.0 @ 3500 RPM
F6209	6	209	90.0 @ 3500 RPM
F6226	6	226	98.8 @ 3500 RPM
F6244	6	244	103.3 @ 3500 RPM
M6271	6	271	96.5 @ 3000 RPM
M6290	6	290	108.0 @ 3000 RPM
M6330	6	330	125.0 @ 3000 RPM
M6363	6	363	146.0 @ 3000 RPM
B6371	6	371	123.5 @ 3000 RPM
B6427	6	427	142.0 @ 3000 RPM
FO6226	6	226	126.2 @ 3400 RPM
K6271	6	271	114.5 @ 3200 RPM
K6290	6	290	123.0 @ 3200 RPM
K6330	6	330	147.0 @ 3200 RPM
K6363	6	363	162.0 @ 3200 RPM
T6371	6	371	143.8 @ 3000 RPM
T6427	6	427	170.0 @ 3000 RPM
U6501	6	501	186.0 @ 2600 RPM
R6513	6	513	192.2 @ 2800 RPM
R6572	6	572	220.0 @ 2800 RPM
R6602	6	602	232.0 @ 2800 RPM
S6749	6	749	250.0 @ 2800 RPM
S6820	6	820	300.0 @ 2800 RPM
V8603	8	603	260.0 @ 3200 RPM

CUSHIONED POWER DIESEL

Model	Cyl.	Displ.	Bare Engine H.P.
TD6427	6	427	146.5 @ 2600 RPM
RD6572	6	572	172.0 @ 2400 RPM
VD8603	8	603	200.0 @ 2800 RPM
SD6802	6	802	225.0 @ 2200 RPM

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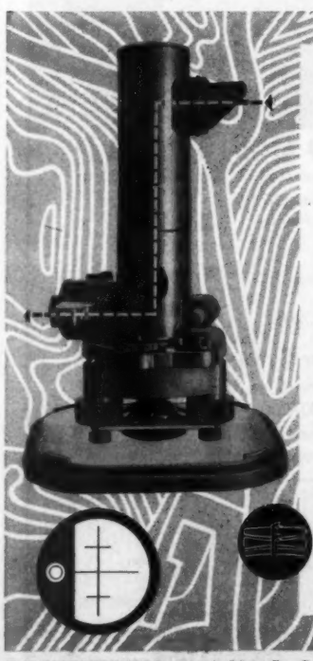

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This article on Stage I construction is the first of two articles on Rocky Reach Dam. Another article on construction under the General Contract-Final Stage will appear soon.

The trench was excavated down through the gravel to clay or rock. It was 37 feet wide at the bottom with side slopes of 1½ to 1. At its maximum depth of 85 feet, the top width was 292 feet. After gravel strata underlying the clay were grouted, the trench was refilled with a core of impervious soils backed by other selected materials.

On the excavation, Goodfellow Bros. used a scraper spread consisting of seven Cat DW21 scrapers and two Cat D8 and 80 scraper combinations, together with D8 and D9 pushers and dozers. Assisting this spread were a Manitowoc 3500 shovel and a fleet of Mack 16-yard end-dumps. Some 380,000 cubic yards of the gravel obtained from the excavation was stockpiled for use as concrete aggregate at the crushing-plant site on the job.

Aggregates for the 250,000 cubic yards of concrete in the first stage were manufactured by a subcontractor, Curtis Construction Co., Spokane. Curtis set up a crushing, washing, and screening plant to process the gravel together with sand imported from a nearby pit.

Concrete production

To produce the concrete for the dam, the joint-venture contractors set up an all-automatic C. S. Johnson concrete plant. An inclined conveyor from the recovery tunnel under the aggregate stockpiles delivered aggregates to the 600-ton 5-compartment bin at the top of the plant. Cement, delivered by truck transport, was stored in two 900-barrel silos and raised to the cement storage bin of the plant in a tall bucket elevator.

Aggregates, sand, cement, water, and admixtures were proportioned in the automatic batching unit of the plant and charged into three Koehring 2-yard tilt-mixers. The three mixers discharged into a 9-yard wet-batch hopper, from which the Gar-Bro 4-yard buckets were loaded. Low-bed trailers pulled by Mack trucks hauled two or three buckets at a time to the points of placement. The 9-yard wet-batch hopper permitted the loading of two or three 4-yard buckets in quick succession and allowed all three mixers to keep running between loads.

Two Manitowoc 4500 cranes with 140-foot booms picked the buckets off the trailers and hoisted them to the forms. One of the cranes had a 20-foot jib for additional reach at the top of the high spillway piers.

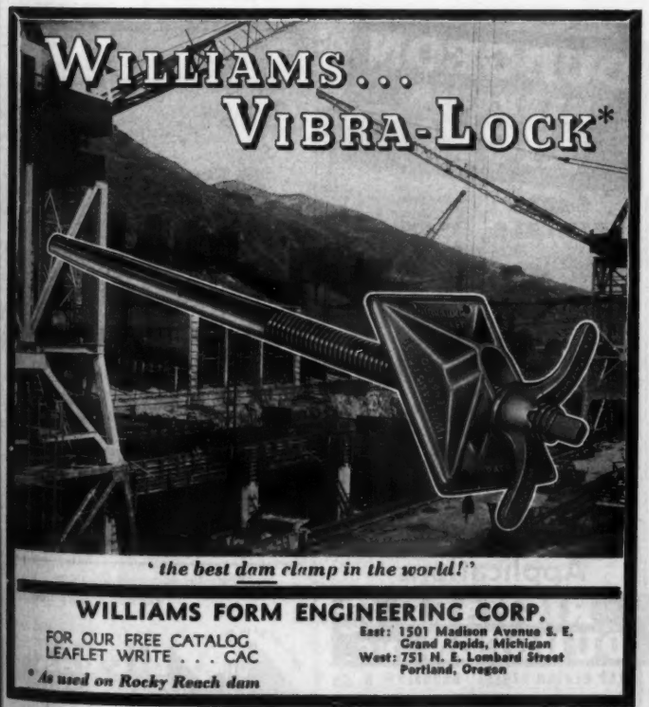
The cranes used Gar-Bro automatic hooks to handle the buckets. These made it possible for the crane operator to hook onto a bucket or disengage the hook without the assistance of a workman. This eliminated one of the dangerous jobs encountered when men must work in close proximity to the heavy swinging buckets.

Forming

To form the upstream and downstream training walls, the contractor used Blaw-Knox steel cantilever forms with wood lagging. Forms for the spillway blocks and piers were fabricated on the job.

The typical form for a 10-foot lift consisted of 4 × 8 and 6 × 8 horizontal studs faced with 1¼-inch net

(Continued on next page)



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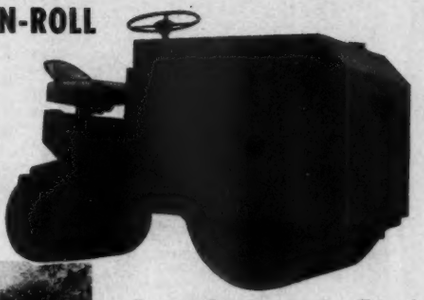
West: 751 N. E. Lombard Street Portland, Oregon

* As used on Rocky Reach dam

For more facts, use Reader-Reply Card opposite page 18 and circle No. 430

2-TON KEN-ROLL ROLLS WITHIN ½ INCH OF WALL OR POST



RUGGED CONSTRUCTION — EASY OPERATION

Here is the well-built roller needed for smaller jobs — frees larger equipment for other work. Used by contractors, highway departments and municipalities. Features single-lever control with constant mesh transmission. Exerts up to 85 pounds pressure per lineal inch when completely water filled, at ⅛ to 2 m.p.h. Positive control power, steering and brakes assures maximum production. 9-h.p. air-cooled engine available with electric or rope starter. Has 90-gal. sprinkler tank and sprinkler mats on each roll.

Phone or write for additional information on KEN-ROLL to do the complete job or as an auxiliary roller.

A few selected dealer territories available.

PFAHLER MFG. CO.

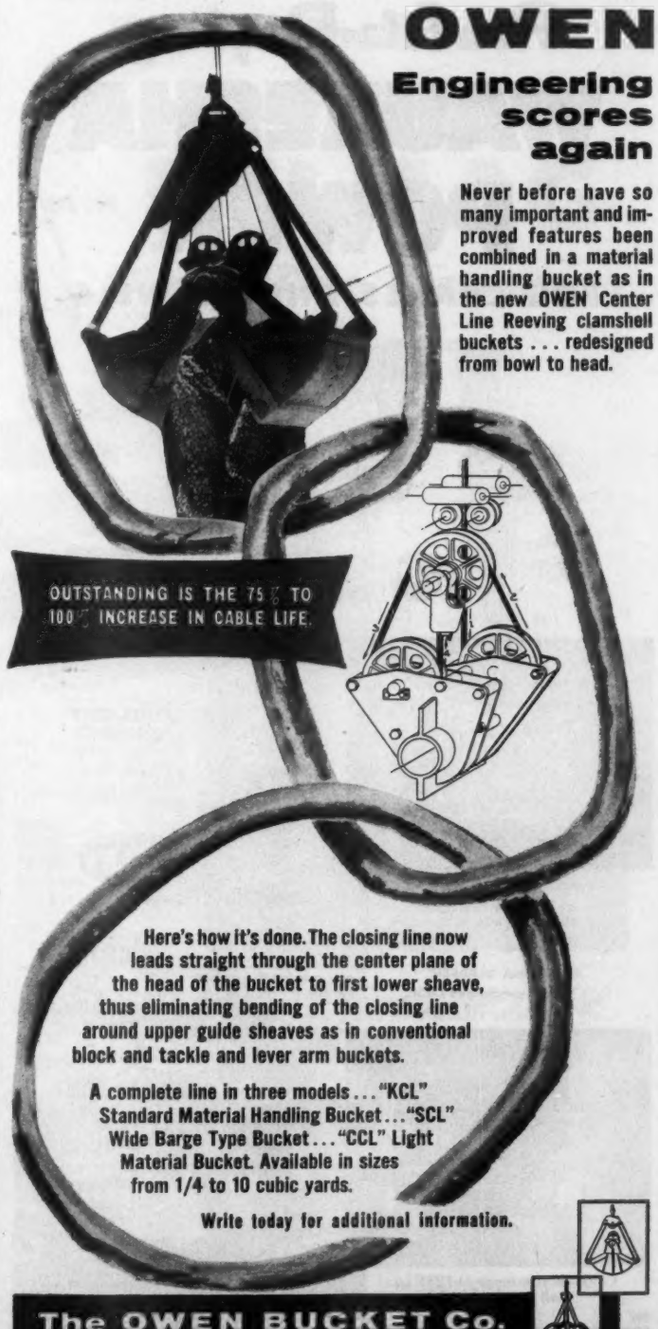
HOward 8-1597 Galion, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 431

OWEN

Engineering scores again

Never before have so many important and improved features been combined in a material handling bucket as in the new OWEN Center Line Reeving clamshell buckets . . . redesigned from bowl to head.



Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.

A complete line in three models . . . "KCL" Standard Material Handling Bucket . . . "SCL" Wide Barge Type Bucket . . . "CCL" Light Material Bucket. Available in sizes from 1/4 to 10 cubic yards.

Write today for additional information.

The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 432

Rebuilding of a state road in Knox County, Tenn., takes some new earthmoving equipment. Working in this cut is a Euclid S-12 scraper, which is being push-loaded by an Allis-Chalmers tractor. W. T. Ratliff Co., Knoxville, Tenn., is handling this phase of the road project.

Shoulder material for a county road job near Memphis, Tenn., is loaded to a Fruehauf dump trailer by a Bucyrus-Erie 22-B with Hendrix bucket. A Ford F8 pulls the trailer. Cordova Sand & Gravel Co., Cordova, Tenn., is handling the job.

Profit-Paying
WAUKESHA
POWER
FOR CRANES AND SHOVELS

WAUKESHA T3S DIESEL
Torque Converter Package—
4⅛ x 5-in., 426 cu. in.

WAUKESHA VLRDBSU
V-12 Turbo-Supercharged DIESEL
8½ x 8½-in., 5788 cu. in.

Complete size range to 1235 hp . . . all standard fuels.

387

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 433

(Continued from preceding page)

sheathing and backed by 6 × 14 timber strongbacks. The forms with necessary staging attached were assembled in 35-foot-long panels, which were handled by one of several cranes on the job. In addition to the two Manitowoc 4500 cranes, there were two Lima 1201's and a Bucyrus-Erie 54-B.

As the forms were set in place, they were tied at the top with I-beam ties on each pair of strongbacks. The bottoms were tied into the previous pour with he-bolts in cast-in anchors. These forms were easily handled, quickly placed, and easily maintained. Reinforcing steel was placed by a subcontractor, Gilmore & Skoubye, Oakland, Calif.

Personnel

The project manager for both Rocky Reach Dam Builders, Stage I construction, and Rocky Reach Contractors, general contract-final stage, is E. W. Elliott. Others on the Stage I

DUDGEON
HYDRAULIC
JACKS

SALES
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FOR:
PILE TESTING
UNDER-PINNING
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CAPACITY TO 600 TONS

DESIGNERS and MANUFACTURERS OF
Hydraulic Units
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For more facts, circle No. 434

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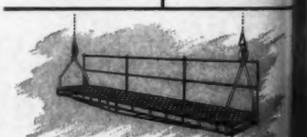
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MAINTENANCE TRESTLE

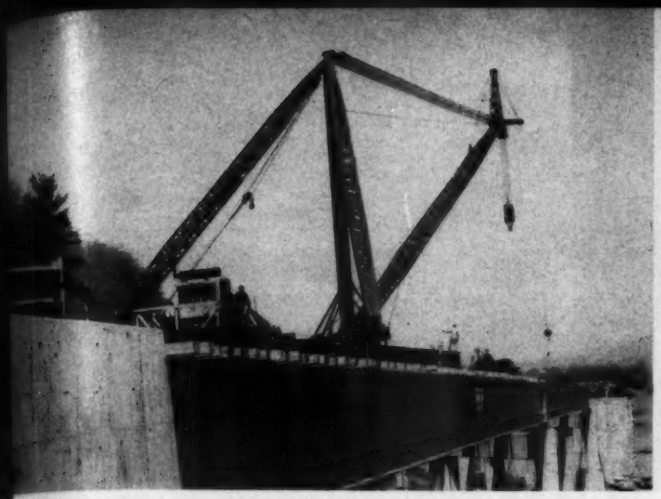
ALL-PURPOSE SCAFFOLD

SHORING EQUIPMENT

Write for complete 24-page catalog . . . it's free.

BIL-JAX
Archbold, Ohio

For more facts, circle No. 435



A 100-ton-capacity derrick is being used to handle 165-foot-long 45-ton girders for a 4-lane welded-girder highway bridge near Corning, N. Y. The bridge, now carrying State Route 17 traffic, has girders supplied by the American Bridge Division, United States Steel Corp.

In a cut for an approach to a bridge over an arroyo on U. S. 87 and 287 near Amarillo, Texas, is a Cat DW21 No. 470 tractor-scraper. The work, part of the reconstruction of 9.5 miles of highway to provide two 24-foot lanes separated by a 40-foot median, is being done by Cooper & Woodruff, Inc., Amarillo.

supervisory staff were general superintendent T. E. Curtis, project engineer W. B. Evans, office manager A. D. Haile, and office engineer C. A. Lindberg.

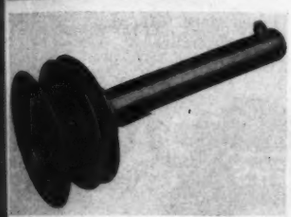
For the consulting engineers, Stone & Webster Engineering Corp., J. H. Boyd is superintendent of construction, G. W. Torrence is assistant superintendent of construction, and I. R. Kline is resident engineer.

The chief engineer of the Public Utility District No. 1 of Chelan County is Ed Metcalf. Manager of the PUD is Kirby Billingsly. THE END

Road Program shows appetite for steel

About twice as much steel per mile goes into modern city highways as goes into their rural counterparts, and the national average for all primary and interstate highways is about 500 tons per mile. Since passage of the highway act in 1956, steel has been going into roads at the rate of nearly one million tons per year.

FOR EFFICIENCY and ECONOMY... 2 WAYS TO MAKE CRANE OPERATIONS PAY MORE



1 RUD-o-MATIC
Combination Magnet Reel-Tagline

Rud-o-Matic Combination Magnet Reel-Tagline saves expensive electric cable wear on overhead and boom crane jobs. Tension on the steel tagline cable keeps the strain from the expensive electric magnet cable. Now standard equipment with major crane manufacturers, the Rud-o-Matic Combination Magnet Reel-Tagline is made in five models to fit your present equipment. Insure complete tagline control on your crane with Rud-o-Matic!

2 RUD-o-MATIC
Tagline

Crane operations are more profitable when you install Rud-o-Matic Taglines. Heavy duty torsion coil spring keeps tension on tagline cable at all times for bucket control. Buckets are held steady at any angle of the boom. Available in 11 models for various bucket sizes and pull out requirements. Taglines delivered fully equipped with fairlead and cable attached—ready to install. Get more pay loads per day with your crane with Rud-o-Matic Tagline Control!

For full information on Rud-o-Matic Taglines, call or write—

McCAFFREY-RUDDOCK TAGLINE CORP.
[illegible] East 25 Street, Los Angeles 58, California
For more facts, circle No. 436

NEW!
Pour footings and walls at SAME TIME

New Economy Footing Forms, combined with regular EFCO Forms, permit pouring footings and walls in one operation. Save time, money, materials.

SEND COUPON FOR INFORMATION

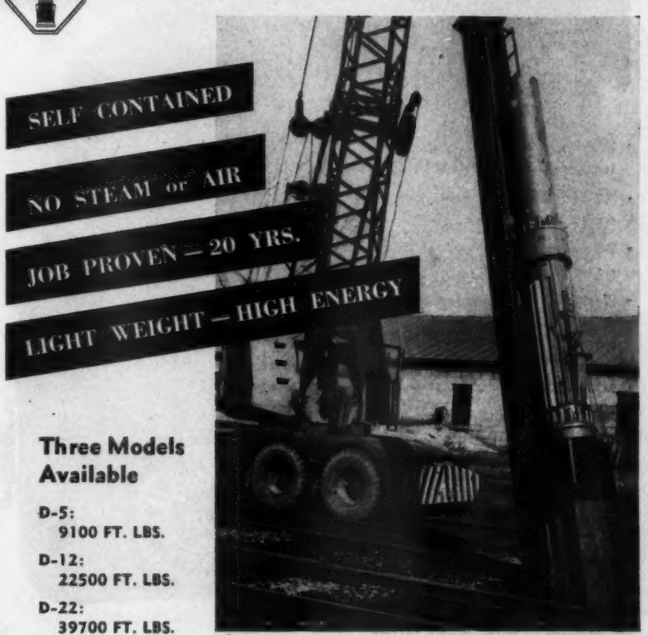
Economy Forms Corporation
Box 128, H. P. Station
Des Moines, Iowa

Please send literature on Economy Footing Forms, and address of nearest sales office.

Name_____
Firm name_____
Street address_____
City_____ State_____

For more facts, use coupon or circle No. 437

Top Performance
Lower Operating Costs
with DELMAG
Diesel Pile Hammers



Three Models Available

D-5:
9100 FT. LBS.

D-12:
22500 FT. LBS.

D-22:
39700 FT. LBS.

DELMAG DIESEL PILE HAMMERS have proven outstandingly successful in the driving of all types of bearing piles and sheet piling. Actual job experience shows much less damage to pile heads, particularly important in driving steel sheet piling.

DELMAG DIESEL PILE HAMMERS are light in weight yet develop tremendous energy per blow. The weight of a DELMAG HAMMER is approximately one-half that of a steam hammer with a comparable energy rating. This results in a tremendous saving on the size of handling equipment required and makes for a much more mobile pile driving operation. Since no outside source of power is required, setup time and moving time is greatly reduced.

The experience gained through 20 years of actual on the job operation has been incorporated in DELMAG'S simple and sturdy construction, resulting in very low maintenance costs.

Since fuel consumption is very low, savings in fuel is a major item in operating costs.

For further information and names of local dealers contact —

in U.S.A.
THE FOUNDATION EQUIPMENT CORP.
100 Elizabeth St., Newcomerstown, Ohio

in CANADA
SPECIAL CONSTRUCTION MACHINES, LTD.
166 Bentworth Avenue, Toronto 19, Ontario

For more facts, use Reader-Reply Card opposite page 18 and circle No. 438

Working in the Trinity River bed near Lewiston, Calif., a crew uses tampers to handle a small part of the compaction job for the Trinity River Dam, a 33-million-yard earth-fill structure. GM-diesel-powered Gardner-Denver compressors supply air to the tampers.

An 82-foot-long prestressed-concrete beam is lifted into position for overpass structure on State Route 5 in south Minneapolis, Minn., by Lorain motor cranes. This phase of construction, part of a cloverleaf section, is being done by McKee Co., St. Paul.

BRAND NEW Barricade Flash!

the Big Beam

TRANSISTA FLASH

- Transistor type, heavy duty for long, dependable life.
- No moving parts to get out of order.
- Two-directional head or 360° dome type Fresnel.
- Electronic flashing mechanism weatherproofed. Telescoping top and rubber gasket make battery case completely weatherproof.
- Acid-proof plastic liners prevent interior case corrosion.

TRANSISTA FLASH produces approximately 2000 hours of continuous flashing from two standard 6-volt batteries, available anywhere. Provided with a concealed, tamper-proof switch operated from outside of case. Equipped with bracket for attaching to barricade. Lens or Fresnel supplied in either amber or red plastic—specify color. Flash frequency is approximately 72 times per minute. Lamp is finished in yellow baked enamel.

Model 410T

No. 433 Barricade—All metal, strong, stable on any surface. Has angle iron construction, closed ends.

Model 418T—with dome type Fresnel.

Model 417T—7 inch head. Otherwise, same as Model 410T.

Big Beam—makers of explosion-proof lamps, emergency lights, hand lamps and flares. 8393

U-C-LITE MFG. CO. 1027 West Hubbard Street Chicago 22, Illinois

Export Department: 201 N. Wells St., Chicago 6, Ill. Cable Address: ENOTS
In Canada: Bernard Marks & Co. Ltd., 70 Claremont St., Toronto 3, Ontario
For more facts, use Reader-Reply Card opposite page 18 and circle No. 439

G-E appoints Smith to 2-way-radio post

Jared S. Smith is the new manager of standard mobile design engineering for G-E's Communication Products Department. He will be responsible for design work on new G-E 2-way radios. Other appointments are as follows: Richard T. Buesing, manager of electronic design; A. G. Manke, circuit design engineer; G. M. Dewire, standard systems engineer; J. P. Coon, mechanical standard [illegible] neer; F. D. Hannell, product prod[illegible] tion engineer; K. K. Bay, transmi[illegible] design engineer; and A. E. Engl[illegible] power devices design engineer.

Fuller promotion

Charles M. Perkins, head of [illegible] research department at Fuller [illegible] Co., Kalamazoo, Mich., has been [illegible] chief engineer. He has been [illegible] Fuller since 1948.

TRANSPORT TRAILERS DELIVER

THE QUALITY LINE OF DEPENDABLE TRAILERS FOR EVERY HAULING NEED!

MODEL XTT

Tandem axle tilt trai[illegible] (tow type), capacities [illegible] through 20 tons.

MODEL PTX

Heavy-duty tandem [illegible] with adjustable [illegible] Telescopes from 16' [illegible] from tractor.

MODEL GXTT

Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL KSO-D

Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.

MODEL FX

Heavy-duty tandem [illegible] spring mounted [illegible] or float.

MODEL MSO-D

Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

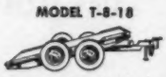
MODEL GPR

Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.

MODEL GPX

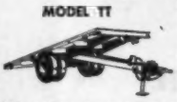
Tandem axle. Capacities through 35 tons. Drop [illegible] or flat deck.

MODEL T-8-18



14 or 18 foot length between the wheel tilt trailer. 8-10 ton capacity.

MODEL TT



Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

MODEL KS-F

Single axle flat bed [illegible] capacities 10 through [illegible] tons. Drop deck or [illegible] deck.

MODEL GTX

Triple axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.

MODEL PX-O

Heavy-duty, self-loading tandem axle oil field float.

TRANSPORT TT TRAILERS INC
CEDAR RAPIDS IOWA, U.S.A.
"TRANSPORTATION ENGINEERING A SPECIALTY"

Send To[illegible]
FREE!
NEW catalog showing [illegible] PLETE line for your tran[illegible] tion needs.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 440

A big pipe section is moved at the Torresdale Filtration Plant in Philadelphia by a Yale industrial lift truck with a special boom. Ambrose Augusterfer Corp., Philadelphia, designed the boom for the fleet of Yale trucks moving sections up to 40 feet in length, plus bulky valves and connectors.

Loading an average 2¾ yards of gravel into a trailer truck is one of many jobs for this Michigan Model 175A tractor shovel at McDonough Bros., Inc., San Antonio, Texas. The unit stockpiles material, cleans up under conveyors, and grades roads at the firm's sand and gravel and hot-mix plants.

Luckman Associates names Sturgeon vice president

Marvin G. Sturgeon, Ventura County director of public works for the past three years, has been named a vice president of Charles Luckman Associates, planning-architectural-engineering firm of Los Angeles and New York.

In his Ventura County post, Sturgeon planned and supervised such public-works projects as roads; subdivision improvements; public buildings and parks; and water-supply, flood-control, and drainage installations.

International Harvester promotes H. F. Griffith

International Harvester's Tractor Works at Chicago, Ill., has a new manager in Homer F. Griffith. Assistant manager of the works since 1953, Griffith succeeds H. A. Torgerson, now manager of I-H's Fort Wayne, Ind., motor-truck plant.

ROCKFORD

MORLIFE® CLUTCHES

Insure SMOOTH Powerful Pick-Up in Heaviest Going

Compared to previous type clutch facings, Morlife® Clutch facings reduce foot pedal pressure up to 50%. They assure positive engagement—with power-holding grip. Provide a degree of heat resistance and dissipation never before available. They give several times the durability for prolonging clutch life and extend the time between pedal adjustments many times as long. Let ROCKFORD clutch engineers show you how these new advantages will improve the operating ease and prolong the on-the-job life of your product.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
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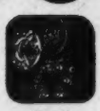
Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

CLUTCHES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 441

CLEAR LAND THE ROME® WAY

ROME•K/G CLEARING BLADE

cuts construction clearing costs as much as 50%

Clearing land for rights-of-way – reservoirs – lakesites – large construction jobs? Don't waste time and power tearing up the ground and fighting with stubborn, hard-to-dispose-of stumps and roots. The Rome K/G Clearing Blade is the perfect answer for practically any type of land clearing. It shears off a wide swath of small trees and heavy brush at ground level in one pass, leaving topsoil undisturbed. It splits large trees – as big as 81" through the base – into small segments, slices them off and quickly builds compact, fast burning windrows, free from dirt. Stumps can be cut off at ground level, or even below the surface.

Compare this new concept in land clearing with old-fashioned methods – here's positive proof of how the K/G Clearing Blade cuts costs as much as 50% – often more! Sizes available for Cat Diesel Tractors from D4 to D9. See your Rome-Caterpillar Dealer today! Rome Plow Company, Cedartown, Georgia.

ROME®

YOUR ROME DEALER IS YOUR CATERPILLAR DEALER

For more facts, use Reader-Reply Card opposite page 18 and circle No. 442

If you can't dig it—blast it!

◀ A toe and line shot made with Hercules 50 per cent dynamite liquefies muck in part of the 518-foot stretch where the new Sea Island Road is being built on St. Simons Island, Brunswick, Ga. Backfill is stockpiled at the end of the bridge to be pushed into the muck.

The contractor working on the new Sea Island Road on St. Simons Island, Brunswick, Ga., used dynamite to blast out muck from an inaccessible 518-foot stretch of roadway. Seaboard Construction Co., Brunswick, Ga., after consultation with the engineers of the Georgia State Highway Department and the Hercules Powder Co., chose this interesting technique instead of a dragline operation to get high production in a minimum of time. It would have been almost impossible to use draglines at the site, where unstable conditions afforded little or no bearing. This operation would also have been slow and costly.

Liquefying muck

Basically, the blasting was used to liquefy the muck and permit suitable fill material to be pushed into its place by dozers. This 518-foot unstable section was located beyond a bridge built over a stream. To extend the roadway, the contractor started operations from the completed bridge deck and from the opposite end of the stretch, and worked toward the middle of the section.

Three blasting techniques were used to cope with specific conditions during this work, which was completed in 10 days. These were the line, toe, and side-toe shots.

The first type consisted of five 100-foot-long rows, spaced 5 feet apart, extended along the roadway center line in front of the backfill material. Each row had blast holes sunk on 18-inch centers. The crew used 5-foot-long cylindrical poles to punch through the soft material and form blast holes. Two sticks of Hercules 50 per cent dynamite were tamped, uncapped, into each hole.

In front of the fill material, the toe shot was formed. This consisted of two rows of blast holes, 2 feet apart, which were spaced on 12-inch centers. The five rows of the line shot were extended from the toe shot. Generally, the toe and line shots were detonated simultaneously. This was done by simply capping the charge in the hole located at the intersection of the center-line row and the toe-shot row.

The blasting of this electrically capped charge by a hand generator set automatically set off the toe shots which, in turn, activated each row of the line shot. The relatively close spacing of the holes, in both the line and toe shots, and the amount of dynamite used, made it possible to set the blast off in this manner.

The third type of blast was the side-toe shot, which consisted of a single row of blast holes—loaded with two dynamite sticks on 18-inch centers—along the toe of the side slopes of the roadway fill. This shot was required at times to liquefy the mud waves built up when backfill material was pushed out.

Fill pushed out

After blasting the area adjacent t
the bridge, Seaboard began hau
backfill material to this point
dump truck. The material w
dumped from the bridge and pu
out into the liquefied muck by a C
D6 tractor-dozer. The contractor u

with MACKS like the
PROJECTS GO FASTE

TOUGH JOBS? On projects where nothing but the utmost in strength, traction and endurance can handle the work over sustained periods—Macks speed the job with their sure, steady performance.

ROUTINE JOBS? When truck cycle time is crucial for profitable operations, Macks keep all other equipment in constant operation . . . show the lowest running and upkeep costs of any truck in their class.

UNUSUAL JOBS? Mack can assemble exactly the
need from interchangeable Mack components—
transmissions, frames, axles, etc.—built by Mack
range of sizes.

ANY QUESTIONS? Ask your nearest Mack branch or
for the names of Mack users who—like yourself—
shown . . . and *were* shown. Mack Trucks, Inc.,
New Jersey. In Canada: Mack Trucks of Ca

ONLY MACKS OFFER YOU ALL THIS:

- Widest range of heavy-duty truck and tractor chassis for construction and road-building—dumpers, concrete mixer models, platform, carry-alls.
- Two, four and six-wheel drive models.

  Six-wheel trucks offer exclusive Mack Balanced Bogie with Power Divider—the four-wheel, rear-axle drive that delivers the most engine power to the wheels having traction.

  Front-wheel drive models have the greatest traction of any truck in their class . . . offer exclusive Mack front-wheel driving axle with greatest ground clearance and all parts fully enclosed.
- Wide Mack power options—diesel and gasoline
  150 h.p. on up to 335 h.p.
- Famous Mack transmissions from 5 to 20-sp
  torque converter option on larger models. Planet
  duction in rear-axle wheels of larger vehicles provi
  power transfer without excessively large gears in t
- Mack-engineered steering systems, famous for
  ing angles and easy handling characteristics,
  Macks to move under shovels faster, maneuver
  faster . . . squeeze in extra trips per shift.
- Rugged, high-tensile frames that give the utm
  tural stamina—heavy-duty axles and suspensions
  light of the heaviest loads over the roughest ro
- Many options—including power steering, po
  power clutch.

MACK *first name for* TRUCKS

two Cat DW21 scrapers to haul in this backfill material at the other end of the 518-foot muck section.

The pushing out of the backfill caused mud waves to build up in front and around the sides of the roadway fill. By using the toe and side-toe blasting pattern together with the 5-row line shot, the contractor not only liquefied the area under the roadway alignment but eliminated the blocking mud waves surrounding the fill. Generally, the toe and side-toe blast holes were sunk through the mud waves as the work progressed from either end.

After a blast, a Cat D6 tractor-dozer rides up the stockpiled backfill to push the material into the blasted area. Scrapers hauled fill to the opposite end of the section. The operation, which would have been almost impossible with draglines working in the unstable area, took 10 days. ►

Over 50,000 cubic yards of roadway fill was hauled in by scrapers and dump trucks from two borrow pits, 2 miles and 5 miles distant, to complete this 518-foot stretch in 10 days. The grade was built up to an elevation of 10 feet above the existing muck and later paved with flexible sand-bituminous road-mix, and double surface treatment.

Personnel

W. E. Goff was superintendent; W. A. Townsend, engineer; and Weyman Smith, assistant engineer for Seaboard Construction Co. John Brogdon is resident engineer for the state highway department. THE END

I-H Tractor Works change

Kenneth B. Fortney is the new assistant manager of International Harvester Co.'s Tractor Works, Chicago, Ill. Formerly general superintendent at the Tractor Works, he succeeds Homer F. Griffith, the new manager.

MACK B-80 SERIES

PAYLOADS: Rear dumper, 6-12 cubic yards; mixer, 7½ to 8½ cubic yards (in six-wheeler models... larger with special provision). ENGINES: 170, 205, 220 and 320 h.p.—diesel; 232 h.p.—gasoline.

ACK B-40 and B-60 SERIES

AYLOADS: Rear dumper, 5-10 cubic ards; mixer, 5½ to 7½ cubic yards six-wheeler models). ENGINES: 150, 70 and 205 h.p.—diesel; 150 and 65 h.p.—gasoline.

the job—

ROFITS ARE GREATER

L LRX—PAYLOADS: Rear dumper, 15 tons. DIESEL 0, 205 and 220 h.p.

MACK MODEL LVX—PAYLOADS: Rear dumper, 22½ tons. DIESEL ENGINES: 320 and 335 h.p.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 447

New Ideas . . .
in MULTI-PLUNGER
Hydraulic Control!

Check HUSCO of WAUKESHA

"The House of Ideas in Hydraulic Control Engineering"

Whatever you need in Multi-Position, Multi-Plunger, accurately rated fluid control valves—you'll benefit by HUSCO Hydraulic Control Engineering.

Write for your copy of this HUSCO catalog "Hydraulic's House of Ideas" — or for prompt engineering aid on your standard or special hydraulic control needs.

HUSCO

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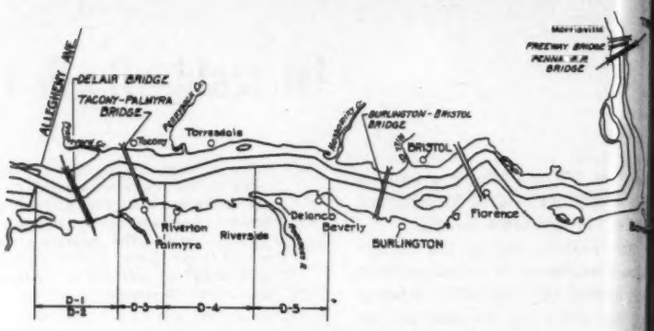
P.O. Box 257-E
Waukesha, Wisconsin

For more facts, circle No. 448

Big dredges are answer to big river channel job



A sketch of the upper Delaware River Channel, which is being deepened to 40 feet and widened to 400 feet under present contracts.

A fleet of hydraulic dredges is removing tremendous quantities of rock and sand to widen, deepen, and realign the Delaware River channel between Philadelphia, Pa., and Trenton, N. J. The existing 25-foot-deep channel is being deepened to 35 feet under a $110 million project with supervision by Col. William F. Powers, district engineer, Philadelphia District, U. S. Army Corps of Engineers. Eventually, the channel depth will be 40 feet and the minimum width 400 feet.

Several dredging contracts

The first contract, amounting to $1,636,362, was awarded to American Dredging Co., Philadelphia, Pa., in August, 1956, for the dredging between Allegheny Avenue and Bridesburg (Section D-2 on the map). This work, which has been finished, involved the removal of over 2 million cubic yards of material. At present, Atlantic Gulf & Pacific Co., New York, N. Y., is deepening this section to 40 feet, under a $1,154,400 contract awarded in July. Atlantic Gulf & Pacific has just completed the removal of 3,100,000 cubic yards of material between Cornwell Heights and Beverly (Section D-5) on a low bid of $3,476,794.

Western Contracting Corp., Sioux City, Iowa, was awarded a $3,586,575 contract in December, 1956, for the removal of 3 million cubic yards between Holmesburg and Cornwell Heights (Section D-4). The fourth contract, for Section D-3 between Wissinoming and Tacony, was awarded for $3,151,350 in January, 1957, to American Dredging Co. This section, which involved the removal of over 3,500,000 cubic yards of material, included the realignment of the channel to provide for safer navigation past the Delair railroad bridge, which is under construction. Both Western and American Dredging Co. have completed deepening the channel to 35 feet. The latest contract, going to AG&P for $1,027,072, covers an area approximately four miles upstream from the Delair railroad bridge. This is the first contract covering removal of a large amount of rock to deepen the channel to 40 feet. Over 218,000 yards of rock will be removed to form the ultimate 400-foot channel.

Hydraulic dredges

Atlantic Gulf & Pacific used the dredge Pittsburgh, which has a 32-inch-diameter suction and a 27-inch-diameter discharge line. It is equipped with a steam-turbine engine that powers the main pumps through a reduction gear. In addition, it drives a turbogenerator that provides elec-

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tric power to the motor of the cutterhead.

The steam-turbine engine develops 4,500 horsepower to drive the main pump, while 400 horsepower is required for the 5-foot-diameter open cutterhead. Positioned by two 66-foot-long 34-inch-diameter spuds, the Pittsburgh makes an average 5-foot cut per pass, which is about 250 feet wide. Excavation in the previous contract was carried down to minus 39 feet below the low-water level and required the removal of 20 feet of overburden. Pumping production varied from 15,000 cubic yards per 24-hour day in sandy material to a much smaller figure when rock ledges were encountered. The material excavated in this area consisted of sand, gravel, schist, and gneiss, as well as boulders.

The contractor is now pumping the material into prepared disposal areas along the shore as was done under the previous contract. The 27-inch-diameter discharge floating line is made up in 40-foot sections, connected by ball joints, each supported by two 32-foot-long pig-nosed cylindrical pontoons. The shore line consists of 16-foot sections, connected by slip-in joints.

Draglines and dozers are used to build up dikes extending out from the shore to form the disposal areas. Timber sluiceways are installed in the dikes to permit water to escape from the disposal area after the suspended fines settle out. The pumping of hydraulic fill into these disposal areas requires constant checking so that the natural drainage of the existing land is not disturbed. This system of disposal is also providing additional waterfront acreage along the project. The average pumping distance is about 2,300 feet, but before the contract is completed, Atlantic expects to be using a discharge line 6,500 feet long without the use of a booster pump.

One of the largest hydraulic dredges in operation works on the Delaware River channel job. The Western Chief, with a 36-inch-diameter suction and a 30-inch discharge, has a diesel-electric plant to drive the pump and cutterhead. Average 24-hour production goes from 3,000 to 15,000 yards, depending on the type of material being dredged.

Giant-size dredge

The Western Chief, owned by Western Contracting Corp., and one of the largest hydraulic dredges in operation anywhere, was used in Section D-4. Having a 36-inch-diameter suction and a 30-inch discharge, this dredge is about 220 feet long and 40 feet wide. It is powered by a diesel-electric unit.

A Cleveland diesel, developing 11,000 horsepower, is used to drive a Westinghouse generator, which powers the cutterhead, main pump, and other utilities on the dredge. The main pump requires 6,000 horsepower while the cutterhead needs about 1,200 horsepower during pumping operations. Average 24-hour production varied from 3,000 cubic yards when the dredge dug through gravel, disintegrated rock, and boulders to 15,000 cubic yards when it dug through sand.

The contractor-built dredge operated within a 200-foot-wide arc to remove the 10 feet of overburden over the existing rock ledge in a single pass. The 400-foot-wide channel required two adjacent cuts. Positioning and moving the dredge is handled by two 85-foot-long 40-inch-diameter spuds. These are raised and lowered alternately to move the dredge forward. This huge dredge is equipped with a ladder 90 feet long to support the basket-type cutterhead being used in this project section.

The floating discharge line, having ¾-inch walls, was handled in 50 and 100-foot-long sections. Two cylindrical pontoons supported the 50-foot sections, while two of the large flat-type pontoons supported the 100-foot pipe lengths. The shore line, leading to the built-up disposal areas, consisted of 16-foot sections connected by slip-in joints. A Caterpillar D9

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(Continued from preceding page)

tractor-dozer, used to shape the dikes and hydraulic fill being pumped into the area, was equipped with an A-frame attached to the power take-off for handling the pipe sections.

The 125-foot-long anchor swing booms, normally a part of the dredge, were not used here because they would have obstructed the navigable channel. A barge was used to move the anchors forward. These were positioned on the flats on either side of the channel. Whenever ships had to pass, the cable was slackened to the bottom of the channel.

The fill for the disposal-area dikes on this contract was supplied by the dredge and shaped by a Cat D9.

The removal of about a million of the 3 million cubic yards required on Western's contract was subbed to Gahagan Dredging Corp., New York, N. Y. Gahagan used its dredge No. 5, which is powered by a steam-turbine electric unit and has a 30-inch suction and 22-inch discharge.

Built by Gahagan in 1921, the No. 5 uses 4,000 horsepower on the pump and 400 horsepower on the cutter. The dredge is 207½ feet long from spuds to cutter, 43½ feet wide, and has two 80-foot-long, 40-inch-diameter spuds 14 feet on centers. The excavation was so rough that the cutterhead blades made of manganese steel wore out after 8 to 48 hours of use. The contractor was forced to weld teeth onto the blades because the foundries could not keep up with the demand for new blades. Manganese-steel stock was kept on a work barge to supply the blade teeth. This, together with the extremely tough digging, squeezed production to about 600 cubic yards per hour.

To handle the estimated 30,000 probings that will be needed to determine the exact locations of the million yards of rock to be removed, the Philadelphia District is using the Jet Probing Barge No. 1. Basically, this new floating rig consists of a steel barge 100 feet long and 30 feet wide, equipped with six 37-foot probing towers. There are three towers on each side, and they ride on rails along the length of the barge.

Each tower is equipped with an air motor that, through a sprocket drive, moves the tower along the rails. Two steel spuds, located along the center line of the barge, are used to hold the rig in position whenever passing ships require the anchor cables to be slackened. Each spud weighs about 17,000 pounds and is 70 feet long. All the winches, pumps, and engines are housed in a 12×45½-foot prefabricated Armco metal building mounted on the barge deck. The fra

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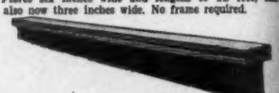

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anchors, handled by a tug, are attached to the barge by cables running off winches powered by General Motors diesels. By means of the anchor and cable winches, the barge can be repositioned by pulling up on the cables after the anchors are moved.

Each tower is equipped with a probe consisting of a 2½-inch-diameter 58-foot-long pipe that is raised and lowered to the river bottom by an Ingersoll-Rand air winch located on each tower platform. An Aurora pump, powered by a GM diesel, supplies about 600 gpm of water to the probe by means of a flexible hose.

Probings are taken on 30-foot centers as the barge is moved from shore to shore across the river. When a pass is completed, the barge is moved upstream to begin another pass back to the opposite shore. The barge is operated by a crew of only 20 men—less than that required by conventional probing techniques.

Nicholas Barbieri is the resident engineer for the Philadelphia District, Corps of Engineers, on the dredging work. The resident engineer for the $12 million reconstruction of the Delair railroad bridge across the Delaware River is G. Primavera. The area engineer for the over-all project is Hubert F. Trudeau.

Gus Pistelli was the superintendent for American Dredging; Ned Goldstrom was the superintendent for Western Contracting; and Robert White was the Gahagan Dredging super. John Ardolino is superintendent for Atlantic Gulf & Pacific.

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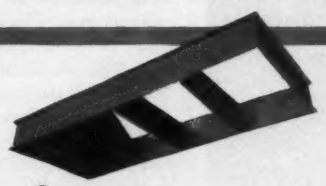

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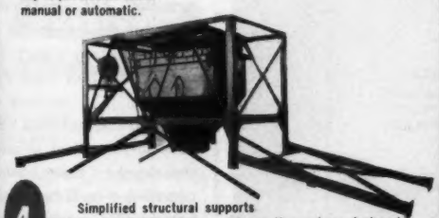

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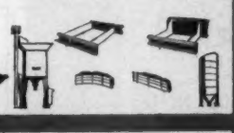

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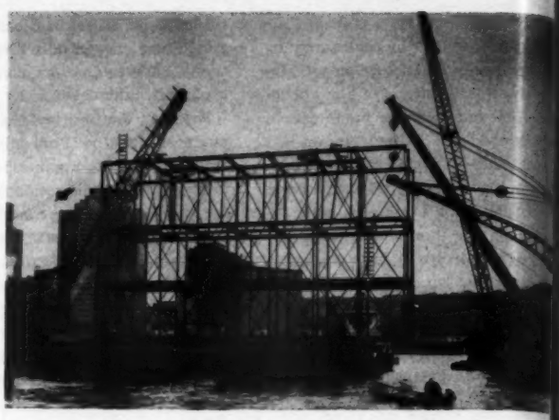


The bracing frame for the cofferdam around the north main pier of the Fort Duquesne Bridge is being positioned for sinking by a 50-ton-capacity derrick boat and a specially built 75-ton-capacity A-frame.

Cofferdam bracing job for bridge pier is big river show

One of the more spectacular jobs involved in construction of the new main pier of the new double-decked 4-lane Fort Duquesne Bridge was the locating of the steel and timber bracing framework for the cofferdam in the Allegheny River. The 90-foot-long, 25-foot wide, and 49-foot-high bracing framework was carried out into the river by two barges and carefully positioned between a 50-ton-capacity derrick boat and a specially built 75-ton-capacity A-frame derrick. The derrickboat's spuds were dropped and the A-frame was flanked by two other derrick boats, also with their spuds down, to keep the equipment from drifting with the current in the river.

The bracing frame was then lifted about two feet above the decks of the barges, and the barges were pulled out so that the structure could be eased into the water and come to rest about 40 feet below the surface.

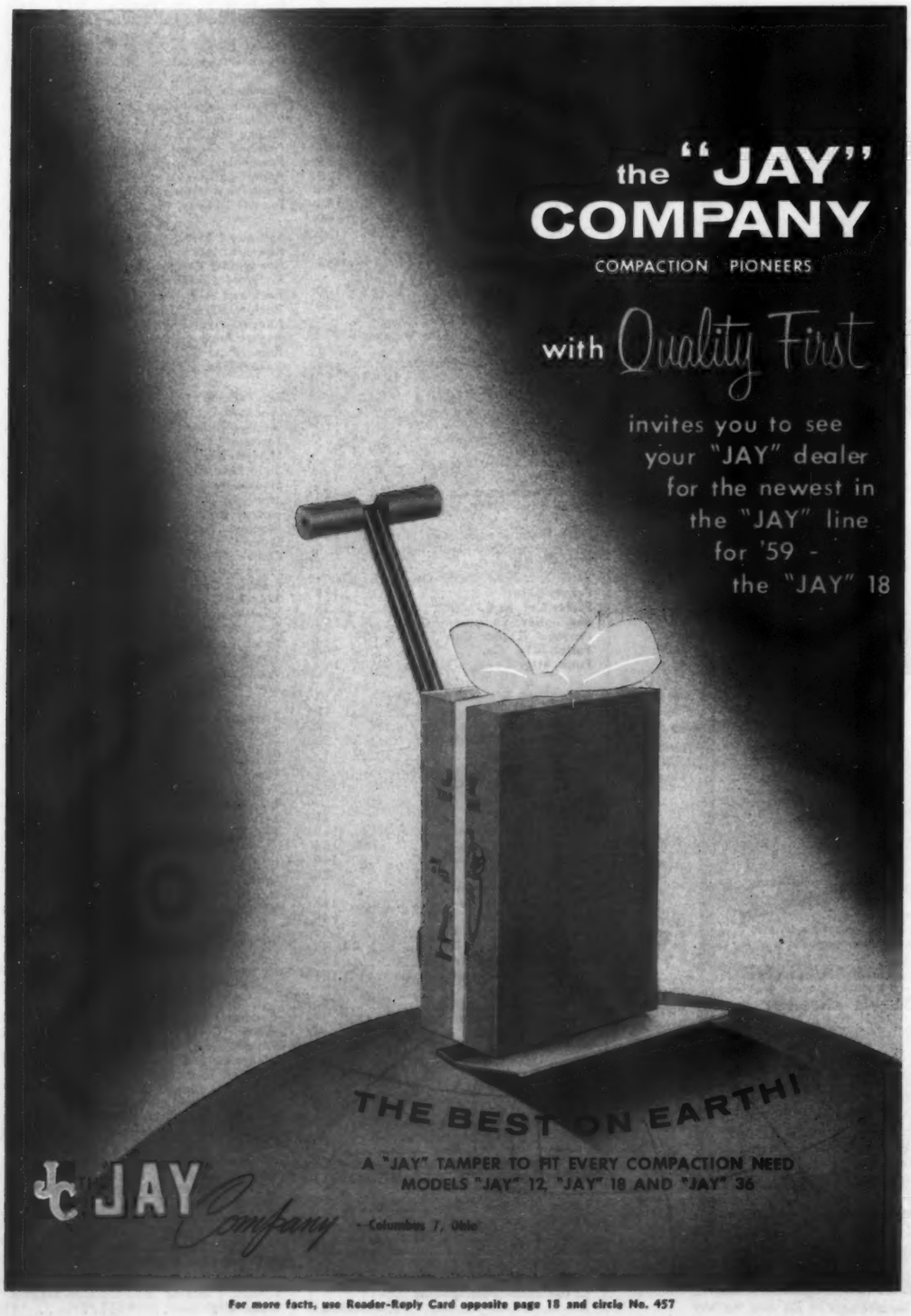
Framework assembly

Workmen for Dravo Corp., Pittsburgh, which holds a $1,957,021 contract from the Pennsylvania Department of highways for the bridge substructure, had assembled the framework on the barges as they lay tied up to a nearby wharf. Derrick boats, meanwhile, had been excavating the pier site.

The frame actually consists of four 90 × 25-foot steel bracing sets, each separated by three rows of eight upright 6 × 6-inch timbers. Between the bottom and second bracing sets, the timbers are 14 feet long. Between the second and third, they are 16 feet long. Between the third and top sets they are 19 feet long. The timbers are cross-braced with 3 × 3-inch steel angles.

The A-frame derrick used in placing the framework has an 81-foot-long boom and its lifting power comes from a derrick boat stationed behind it. A cable attached to the framework led to the derrick-boat hoist through a series of sheaves on the A-frame.

A 20-foot-thick concrete base will be poured with the bottom bracing set embedded in it, and the pier will be built atop this base.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For more facts, use Reader-Reply Card opposite page 18 and circle No. 457

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ALIVE! IT'S ALWAYS SAFER TO SIT IN BACK!

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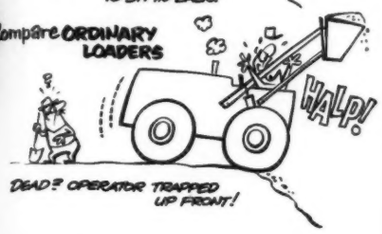

DEAD? OPERATOR TRAPPED UP FRONT!

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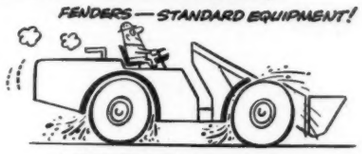
FENDERS — STANDARD EQUIPMENT!



LEGAL FENDERS FOR HIGHWAY TRAVEL

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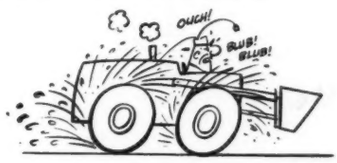

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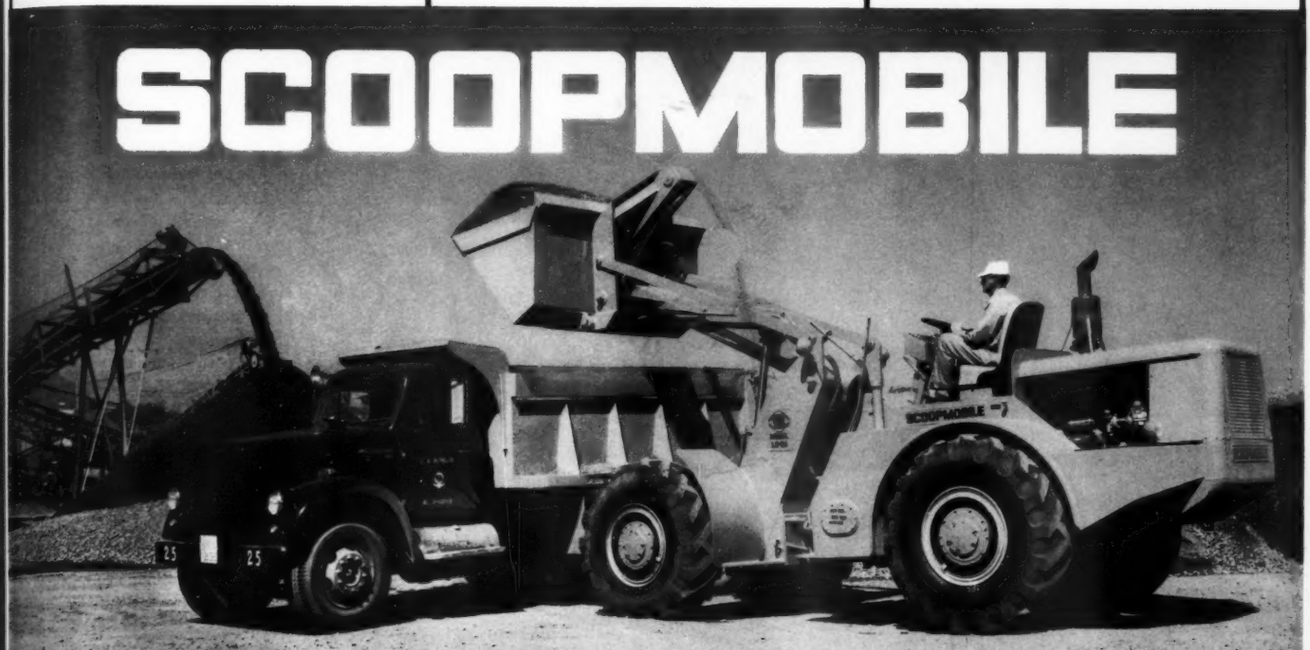
UP YOU GO! BUT, HOW?

SCOOPMOBILE



Compare features and see why SCOOPMOBILE scoops all other loaders for operator convenience...and yardage per man hour

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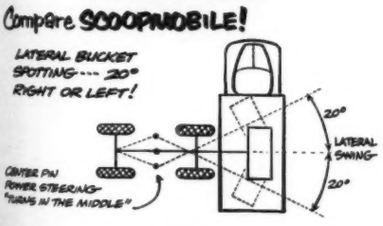
LATERAL BUCKET SPOTTING — 20° RIGHT OR LEFT!



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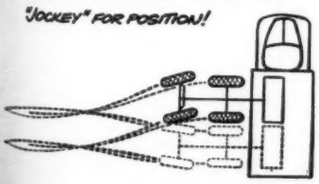
"JOCKEY" FOR POSITION!



4 WHEEL POWER

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EXCLUSIVE TWO-AXLE OSCILLATION! OPERATOR ON REAR OF MACHINE — SMOOTH COMFORT!

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RIGIDID FRAME — OPERATOR MUST TAKE HIS BUMPS WITH THE MACHINE!

CENTER PIN STEERING

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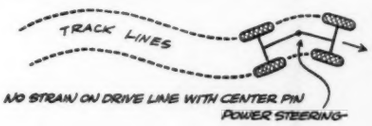
REAR WHEELS ALWAYS TRACK FRONT WHEELS!



NO STRAIN ON DRIVE LINE WITH CENTER PIN POWER STEERING

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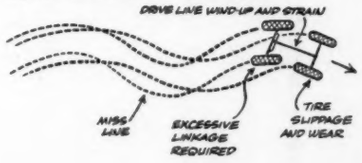

SCOOPMOBILE a product of **MIXERMOBILE MFGRS., INC.**

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"How we licked problems of clay and steep grades . . . cut costs . . .

doubled production"

As told by
GEORGE BENNETT
President
Bennett Construction Co.
Bethel, Kansas

What's the best and most economical way to boost production when wet clay or steep grades slow your haul units? That's a problem that troubles many dirtmovers!

We think we have a good answer to it here at Bennett Construction Company. We put our Model 380 Michigan Tractor Dozer to work as a pusher on the most critical haul grade or in the wettest spot. It has the advantage of giving us both power (375 hp) and speed (25 mph, forward *and reverse*).

PUSH-LOADING, Bennett's Michigan regularly heaps 25 yd pans in 30 seconds. With 3 scrapers on 2000 ft haul, it averages 45 to 55 loads per hour. All-around visibility, plus rear push-block, permits effective pushing both forward and backward.

Triples uphill speed of haulers

Take our recent 946,000 yard modernization of U. S. 71 north of Kansas City as an example. Here our most critical haul point was a 600 ft access road leading to the top of a 50 x 90 x 1000 ft fill. Maximum grade ran about 35%. Footing often was wet and slippery. Without a pusher, our four 18-yd bottom-dump wagons sure had trouble. With *crawler* assistance, things weren't much better. But with the power-shifted, torque converter Michigan, the upgrade haul went *three times as fast* as the wagons could roll on their own. Michigan also push-unloaded each hauler . . . spread the load . . . then shot right down the steep fill face to save time in getting behind the next wagon.

Equals work-pace of four crawlers

Because of this speed and rubber-tired mobility, we were able to move two big crawlers, formerly assigned pushing work, to other jobs . . . *and still step up the fill operation 100%*. Had we tried to get this increased production *without* the Michigan, we would have needed two crawlers on the hill, plus two on the fill. So we figure the Michigan saved us substantially on operating costs . . . counting everything, about three-fourths!

Michigan "effective in rock"

Of course, we don't expect to save that much with a Michigan *all* the time. But experience shows the Model 380 *speeds practically any dozer job.* It's particularly good in wet clay, rock, or plain old dirt. We think it won't be long before *every* contractor will boost his rubber-tired dozer fleet to *at least 50-50* with crawler units.

SPREADING FILL, low-pressure tires and all-wheel-drive take Michigan through soft footing. Rig operates so simply, reports Owner Bennett, that "despite labor turnover, we have no trouble getting good operation on the Michigan."

Among his choices—*and yours*—right now—are four Michigans. The 375 hp model—plus 165, 262, *and 600 hp* sizes. Let us show you one in action NOW, so you can judge how soon some of these machines should be added to *your* fleet.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

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